SANTA CLARA

Undergraduate Bulletin 1984–1985

Directions for Correspondence

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Director of Career Development and Placement Center:
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School of Engineering, undergraduate and graduate programs
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Academic affairs
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UNIVERSITY OF SANTA CLARA

Undergraduate Courses and Degrees

1984–85 BULLETIN

SANTA CLARA, CALIFORNIA 95053 Telephone (408) 554-4700

TABLE OF CONTENTS

THE UNIVERSITY OF SANTA CLARA

Academic Calendar 5
Statement of Purpose 7
Historical Perspective 8
Campus Location 10
Academic Organization 11
The Santa Clara Plan 11
  Summer Session 11

ADMISSIONS AND FINANCIAL SERVICES

Admissions Information 12
  Freshman Standing 12
  Advanced Placement 13
  Transfer Credit 14
  Foreign Students 15
Student Financial Services 16
  Expenses 16, 21
  Method of Payment 17
  Guaranteed Tuition Plan 17
  Refunds 18
  Financial Aid 19

ACADEMIC PROGRAMS

The University Curriculum 22
College of Arts and Sciences 22
Degree Requirements 23, 24
  Anthropology and Sociology 26, 30
  Art 34
  Biology 38
  Chemistry 42
  Classics 46
  Combined Sciences 52
  Economics 52
  English 56
  History 64
  Mathematics 73
  Modern Languages and Literatures 79
  Multidisciplinary Studies 88
  Music 89
  Philosophy 95
  Physics 99
  Political Science 103
  Psychology 111
  Religious Studies 117
  Theatre Arts 124

Leavey School of Business and Administration 130
Accounting 132
Decision and Information Sciences 134
Economics 137
Finance 140
Management 141
Marketing 143
School of Engineering 146
Technology and the Quality of Life 151
Applied Mathematics 153
Civil Engineering and Engineering Mechanics 153
Electrical Engineering and Computer Science 157
Mechanical Engineering 160
Division of Counseling Psychology and Education 162
University Programs 165
Honors Program 165
University Institutes 165
Studies Abroad 166
Ethnic Studies Program 166
Women's Studies Program 168
Special Programs 172
International Business Studies 172
Military Science 173
Retail Studies 177
Institute for Paralegal Education 177

Academic Information

General Graduation Requirements 178
Honors 178
A Second Bachelor's Degree 179
Registration 179
Academic Advising 179
Student Records 181
Honor Societies 182
Awards and Prizes 184

Academic Regulations

Grading System 189
Course Unit Restrictions 190
Challenging Courses 191
Repetition of Courses 191
Auditing Courses 191
Independent Study 192
Changes in Registration 192
Transfer Within the University 192
Concurrent Enrollment 192
Attendance 193
Written Examinations 193
Academic Integrity 193

Academic Standing 193
Withdrawing 194

University Religious, Social, and Cultural Life
Campus Ministry 195
Student Life 195
Conduct 196
Housing and Residence Life 196
Athletics 197
Student Government 197
Student Organizations 198
Student Services 199

Facilities
Leavey Activities Center 201
Adobe Lodge 201
Benson Memorial Center 202
Classroom Buildings 202
Cowell Health Center 202
Student Housing 202
Michel Orradre Library 202
Mission Santa Clara 202
de Saisset Museum 202
Nobili Hall 203
Ricard Memorial Observatory 203
Buck Shaw Stadium 203
Louis B. Mayer Theatre 203

University Accreditations and Memberships 204

University Administration
University Administrators 205
University Services 205
College Administrators 205
Board of Trustees 206
Board of Regents 207

Faculty
Endowed Academic Chairs 209
Emeriti 209
Faculty 211
Index 226

ACADEMIC CALENDAR 1984–85

Fall Quarter

September 15–18	Saturday–Tuesday	New Student Orientation
September 18	Tuesday	Registration
September 19–21	Wednesday–Friday	Late registration
September 19	Wednesday	Instruction begins
September 26	Wednesday	Last day for adding classes
October 12	Friday	Last day to petition for degrees to be conferred in December 1984
October 19	Friday	Last date for removing Spring Quarter 1984 incompletes (faculty)
November 16	Friday	Last day to withdraw from classes
November 22–23	Thursday–Friday	Thanksgiving Recess, Academic and Administrative holidays
November 27	Tuesday	Classes end
November 30–December 4	Friday–Tuesday	Fall Quarter examinations
December 24–25	Monday–Tuesday	Christmas Recess, Administrative holiday
December 31–January 1	Monday–Tuesday	New Year Recess, Administrative holiday

Winter Quarter

November 29	Thursday	Registration
Janaury 3	Thursday	Instruction begins
January 3–4, 7	Thursday–Friday, Monday	Late registration
January 10	Thursday	Last day for adding classes
January 15	Tuesday	Martin Luther King's Birthday, Academic and Administrative holiday
January 25	Friday	Last day to petition for degrees to be conferred in March 1985
February 1	Friday	Final date for removing Fall Quarter 1984 incompletes (faculty). Last day to petition for degrees to be conferred in June 1985
February 18	Monday	President's Day, Academic and Administrative holiday
March 1	Friday	Last day to withdraw from classes
March 12	Tuesday	Classes end
March 15–19	Friday–Tuesday	Winter Quarter examinations

continued next page

Spring Quarter

March 6	Wednesday	Registration
April 1	Monday	Instruction begins
April 1–3	Monday–Wednesday	Late registration
April 5	Friday	Good Friday, Academic and Administrative holiday
April 8	Monday	Last day for adding classes
April 26	Friday	Last day to petition for degrees to be conferred in August 1985. Final date for removing Winter Quarter 1985 incompletes (faculty)
May 24	Friday	Last day to withdraw from classes
May 27	Monday	Memorial Day, Academic and Administrative holiday
June 7	Friday	Classes end
June 10–13	Monday–Thursday	Spring Quarter examinations
June 15	Saturday	134th Commencement

Summer Quarter

May 13–June 24	Monday–Monday	Registration
June 24	Monday	Instruction begins
July 4	Thursday	Independence Day, Academic and Administrative holiday
August 5–6	Monday–Tuesday	Summer Session examinations

*All dates are inclusive

The University of Santa Clara

Statement of Purpose

Inspired by the love of God to serve through education, begun by the Franciscans who founded Mission Santa Clara in 1777 and continued by the Jesuits who opened the College in 1851, the University of Santa Clara declares its purpose to be the education of the human person within the Catholic and Jesuit tradition.

The University is thus dedicated to:

- a community of highly qualified scholars, teachers, students, and administrators bound to an uncompromising standard of academic excellence;

- an education that, in its emphasis on undergraduate studies and its pursuit of selected high quality graduate and professional programs, stresses moral as well as intellectual values, an education of the whole person, an education seeking to answer not only "what is" but "what should be";

- an academic community informed by Catholic principles, a community offering its members the opportunity for worship and for deepening their religious perception, yet a community enriched by men and women of diverse religious and philosophical as well as social and racial backgrounds, a community opposed to narrow indoctrination or proselytizing, a community wherein freedom of inquiry and freedom of expression enjoy the highest priority;

- an integrated curriculum designed not only to provide the scientific and humanistic knowledge necessary to enable students to become fully human, but also to demonstrate the unity of all forms of knowledge and to enable students to assume leadership in the modern world;

- the encouragement of teaching excellence and of the scholarly research that promotes such excellence, of close student–teacher relationships, of experimental and innovative courses and teaching methods—courses and methods that stimulate not only the acquisition of knowledge but also the creative use of knowledge;

- an academic community in which students, teachers, and administrators dedicated to academic freedom and united in the search for truth actively formulate and carry into effect the University's policies.

Board of Trustees
University of Santa Clara
January 22, 1975

Historical Perspective

On January 12, 1777, six months after the signing of the Declaration of Independence, a cross was planted at a site in the present city of Santa Clara by a Spanish Franciscan missionary, Tomas de la Pena, to mark the founding of the eighth of California's original 21 missions, Santa Clara de Asís.

Three quarters of a century elapsed before the University of Santa Clara, or Santa Clara College as it was known, opened its doors as an institution of higher learning. In the intervening years, however, the mission served as a spiritual center and school for the Indians. Besides religious instruction, the men were taught stockraising, farming, and the building trades; the women, weaving and sewing; the boys, reading, music, and religious drama. From 1777 until Mexican government secularization on February 27, 1837, some 9,000 persons were baptized at the mission.

During the early period, the less solidly built mission buildings of the first and second sites were destroyed by the flooding waters of the Rio Guadalupe. The third mission church, constructed of adobe, was completed in 1784 but was seriously damaged by earthquakes in 1812 and 1818. A fourth church, also adobe, was used temporarily from 1819 to 1825. The larger, fifth adobe mission with its quadrangle patio, was completed and dedicated August 12, 1825. The University's Adobe Lodge Faculty Club is all that remains of the west wing of that quadrangle.

The first site of Mission Santa Clara is marked by a California state historical landmark located near the intersection of Kifer Road and De La Cruz Boulevard. Crosses mark the second site at De La Cruz Boulevard and Martin Street and the third site at Campbell and Franklin streets. The fourth mission church stood between what are now Kenna Hall and the Delia Walsh Administration Building.

During the first three decades of the nineteenth century, the old mission enjoyed its most fruitful years. In 1827, well over 1,400 Indians lived within sound of the mission's bells. In that year, some 15,000 sheep, 14,500 head of cattle, and abundant crops of wheat, corn, and beans were produced and cared for by the Indians under the guidance of the missionaries.

A combination of factors terminated the decades of prosperity at Santa Clara and the other California missions. The Mexican War of Independence brought turmoil from 1810 to 1821 and resulted in a decrease in Franciscan personnel and donations-in-aid from benefactors. The new Mexican government took possession of the old Jesuit Pious Fund of the Californias that had been the main source of support for the mission. Most of the Indians' lands, cattle, and sheep became the object of spoliation by civil administrators.

In 1827 and again in 1829, governmental decrees ordered exile for all Spaniards who refused allegiance to the new regime. Since most of the mission padres were from Spain, many chose banishment. Some, however, remained until 1833, when Mexican Franciscan replacements arrived from the missionary college of Zacatecas. Among them was Fray Francisco García Diego y Moreno, who was to become the first bishop of the Californias. Although committed to the welfare of the Indians, the padres' resistance to governmental encroachment on the Indians' rights and property had little effect. Finally full secularization of mission properties was imposed at Mission Santa Clara in early 1837. This action ended the effectiveness of the Franciscan missionary endeavor in Alta California.

Within a few years, the mission buildings and the Indian lands, cattle, and sheep fell to civil officials and their friends.

In the early 1840s, a new people and a new way of life came to Alta California. Most of the immigrants were Anglo-Americans attracted by the rich lands of the Santa Clara Valley. In 1848, the Treaty of Guadalupe Hidalgo ceded California to the United States. Statehood was granted in 1850.

It was in this setting that Santa Clara opened its classroom doors in May 1851. The new Bishop of San Francisco, Joseph Sadoc Alemany, asked Jesuits Michael Accolti and John Nobili, formerly Oregon missionaries, to open a college at Mission Santa Clara. During its first academic year, 1851–52, Father Nobili and a handful of Jesuit and lay teachers offered instruction in a variety of subjects to approximately 40 students. A decision made in 1854 by the Jesuit Province of Turin, Italy, to adopt California as a permanent mission field marked a turning point in Santa Clara's history. As a consequence, the Jesuits of Turin provided the college with the faculty and support that it needed to grow. The following year, Santa Clara College received a charter of incorporation from the state of California.* In 1857, the college conferred its first collegiate degree, a Bachelor of Arts diploma, on Thomas I. Bergin. This was the first diploma granted by any institution of higher learning in the state of California. By 1858, new scientific apparatus arrived from Paris, and integrated courses in science as well as in the classics and in commercial subjects were offered.

Slow and steady growth followed, and distinguished graduates became prominent members of California life. It was not until 1912, however, that the Schools of Law and Engineering were founded. In that same year, courses in the Humanities and the Sciences were expanded, and the college became the University of Santa Clara. Meeting the demands of urban growth in the Santa Clara Valley, courses in commerce and finance were also expanded in 1926, and the University's School of Business and Administration began. In that same year, the old mission church was destroyed by fire. The present structure, an enlarged replica of the original, was completed in 1928.

From the 1930s through World War II, the University's enrollment was relatively stable. The return of many veterans resulted in an enlarged student body and new resources. In 1947, for the first time in the University's history, enrollment broke the one-thousand mark. From the postwar period to the present, the face of the campus has been changing and expanding. In 1961, the University announced a major change in policy and accepted women as undergraduate students for the first time in its 110-year history. Santa Clara became the first Catholic coeducational institution of higher learning in California. Thanks to the generous support of many friends, 23 new buildings have been added to match the growth in enrollments. Still newer facilities—the Louis B. Mayer Theatre, Leavey Activities Center, and Cowell Student Health Center—were completed in the early 1970s.

THE UNIVERSITY'S LEGAL NAME is *The President and Board of Trustees of Santa Clara College* to which should be added, *A Corporation, located at Santa Clara, California.* For the information of individual, corporation, and foundation donors who wish the tax benefits of their gifts and grants, the University is classified by the Internal Revenue Service as a 501 (c) (3) (ii) tax-exempt organization and it is not classified as a private foundation under section 509 (a) of the IRS Code.

Although the student body has grown rapidly in the past decade, it has been held relatively small: 3,600 undergraduates and 3,600 graduate and law students. Since 1960, the number of courses taught has more than doubled and educational opportunities at all levels have increased.

In 1964, the University adopted the Santa Clara Plan, an academic plan and calendar that divide the school year into three eleven-week terms and limit the number of courses a student may take to three or four in each quarter.

As an independent University supported by tuition and gifts, Santa Clara has been able to accomplish change in ways that reflect its traditional concern for the individual student.

Today, the University of Santa Clara, the first institution to offer classes in higher learning on the West Coast, continues its mission heritage of service by helping its students equip themselves with advanced knowledge and humanistic values. Academic excellence in a well-balanced human being is the University's goal.

Campus Location

The University of Santa Clara is 46 miles from San Francisco, near the southern tip of the Bay, in an area rich in opportunities for learning. The campus is situated in the midst of one of the nation's great concentrations of high-technology industry and professional and scientific activity. Many nearby firms and social agencies are world leaders in the search for solutions to man's most critical problems. The cultural and entertainment centers of San Francisco, Berkeley, Oakland, and Marin County are within one-hour's travel by bus, train, or car. In the opposite direction, the Pacific beaches of Santa Cruz are about 30 minutes away; the world-famous Monterey Peninsula and Carmel are two hours away.

The University is accessible by major airlines via San Jose Municipal Airport, which is three miles from campus, and via San Francisco and Oakland International airports.

Santa Clara has a moderate Mediterranean climate. Over a period of 67 years, the average maximum temperature was 71.4 degrees and the average minimum, 41.6 degrees. The sun shines an average of 293 days per year, and the average annual rainfall is about 15 inches.

Academic Organization

The University is organized into five academic units.

The College of Arts and Sciences offers 25 majors leading to either the Bachelor of Arts or the Bachelor of Science degree. In addition, the Department of Music offers a Bachelor of Music in Performance degree. The College also provides the liberal arts curriculum to all undergraduate students in the University.

The Thomas and Dorothy Leavey School of Business and Administration offers a professional education in both undergraduate and graduate programs. The Executive Development Center, an integral part of the school, offers nondegree seminars, lectures, and programs for professional managers and executives. The graduate programs are described in *Leavey School of Business and Administration Graduate Programs*.

The School of Engineering offers a technical education in both undergraduate and graduate programs. The graduate programs are described in *School of Engineering Graduate Programs*.

The School of Law offers a full range of courses in federal, state, and international law that leads to the J.D. degree. The *School of Law Bulletin* describes its programs.

The Division of Counseling Psychology and Education offers programs in various areas of counseling and education. *Counseling Psychology and Education Graduate Programs* describes its programs.

The Santa Clara Plan

The Santa Clara Plan is designed to encourage in-depth study by limiting the number of courses a student takes at any one time. Over a four-year period, however, the Plan offers many opportunities to explore a wide range of interests relating directly or indirectly to a major field of study.

The academic year (September to June) is divided into three 11-week terms. The eleventh week is devoted to examinations. Freshmen and sophomores normally take four 4-unit courses each term, while juniors and seniors ordinarily take three 5-unit courses per term. An exception is in the School of Engineering, where upper division students ordinarily enroll in four 4-unit courses each term. Most classes are scheduled on Monday, Tuesday, Thursday, and Friday—with Wednesday devoted to study, research, and other University activities.

Summer Session

The six-week summer session offers day and evening courses for college credit. Undergraduate courses are offered in a number of academic disciplines. No transcript is required for admission, but all applicants must be in good academic standing. Students with advanced placement credit who have finished the eleventh grade may enroll in freshman-level courses. Room and board are available on campus at reasonable rates.

Graduate courses are also offered in the Leavey School of Business and Administration, the School of Engineering, the School of Law, and the Division of Counseling Psychology and Education. Course information may be obtained from the individual schools.

Admissions and Financial Services

Admissions Information

Admission to Freshman Standing

Criteria

The University makes selective decisions regarding applicants for admission, decisions based on the following criteria: first, high school record; second, scores on College Entrance Examination Board tests; third, school recommendations; fourth, personal factors such as extracurricular involvement, character, and leadership; fifth, relationship to the University.

Admission to freshman standing at Santa Clara depends on a continued high level of performance during the remainder of the applicant's senior year in high school and on receipt of a high school diploma. If a significant change occurs in academic work during this year, the Committee on Admissions will reevaluate the acceptance in light of that change.

Campus Visits

The University encourages every candidate to visit the campus, preferably when school is in session so the candidate can visit classes and speak with professors and students.

Although interviews are not required, a member of the Admissions staff will be happy to meet with candidates. Appointments should be made in advance.

Recommended Courses

The following high school courses are recommended for a student applying for admission to the University as a freshman.

	NUMBER OF UNITS		
	Liberal Arts Majors	*Business & Social Science Majors*	*Natural Science, Mathematics, and Engineering Majors*
COURSE			
Algebra	2	2	2
English	4	4	4
History	1	1	1
Foreign language (one)	3	3	3
Plane geometry	1	1	1
Lab science (upper division)	1	1	2*
Trigonometry		1/2	1/2
Optional**	4	3-1/2	2-1/2

* Physics and Chemistry are recommended lab sciences for Natural Science and Engineering Majors.

** Optional courses must be in advanced foreign languages, mathematics, laboratory science, or other solid college-preparatory courses.

Admission Procedure

Prospective freshman student should

1. File the application and service fee of $25.00 with the Admissions Office, University of Santa Clara (application forms may be obtained from that office).
2. Submit a recommendation from the high school counselor, evaluating scholastic ability and character, to the Admissions Office (recommendation form is provided with application).
3. Request the high school to forward a sixth-semester transcript to the Admissions Office.
4. Take the Scholastic Aptitude Test or the College Entrance Examination Board no later than January of the senior year or earlier, and request that scores be sent to the University. For information on dates and places of this test, write to the College Board, ATP, 1947 Center Street, Berkeley, California 94704, or Box 592, Princeton, New Jersey 08541.
5. Make certain all the above are completed and the required materials are submitted to the Admissions Office, by March 1. Full consideration cannot be assured for applications received after that date.
6. Mail application materials directly to the Admissions Office.

Sixth-Semester Decision

Students may seek an admissions decision after the sixth semester. Transcripts reflecting six semesters of work and recommendation forms should be sent by the high school. The decision concerning admissions will be rendered beginning in December. If the Committee on Admissions feels that additional academic information is required before reaching its final decision, the student will be so informed in a letter.

Advanced Placement

Santa Clara participates in the Advanced Placement Program to grant recognition to college-level academic achievement prior to matriculation and to encourage students to pursue advanced studies in their areas of interest.

Credit or placement is determined on the recommendation of the appropriate department, which will review the student's scores and may also review the student's high school record, teacher evaluations, substantiation of independent studies, and transcripts from other colleges. Course credit is offered to students who qualify in subjects according to the schedule issued by the University Registrar. Students will be notified of such credit on matriculation at Santa Clara.

Subjects in which credit may be granted include:

American History
Art History
Biology
Calculus (two courses)
Chemistry
English Composition and Literature
English Language and Composition
European History
French Language
French Literature

German Language
German Literature
Latin (two courses)
Music (two courses)
Physics (three courses)
Spanish Language
Spanish Literature
Studio Art (two courses)

Admission to Advanced Standing (Transfers)

The University accepts a number of transfer students, principally at the sophomore and junior levels, each year.

Since applications exceed the number of students who can be accommodated, no specific statement can be made about the quality of work (GPA) which will enable a transfer applicant to be accepted. Only students in good standing at the last college attended will be considered. No student on academic or disciplinary probation or suspension will be considered for admission.

Ordinarily, there is no minimum number of units required for transfer admission. However, the student who was not accepted as a freshman cannot be considered until he or she has completed at least 45 quarter units or 30 semester units of transferable college work. In general, a student's class standing is determined by the number of units applicable to his or her degree program.

The Scholastic Aptitude Test of the College Entrance Examination Board and a high school transcript are required of transfer applicants who have completed less than 45 quarter units or 30 semester units of transferable work.

Transfer students may apply for admission for fall, winter and spring quarters. Deadlines for applications to those terms are fall, July 1; winter, November 15; spring, February 15.

Transfer Credit

Transfer credit is determined by the Dean of the College or School following the student's acceptance and submission of registration deposit. No evaluation will be made before that time. The following general statements apply to transfer credit.

- The University of Santa Clara awards transfer credit to students who have completed, with a grade of C or better, courses taken at other accredited four-year Universities and Colleges. The academic levels of these courses must be essentially equivalent to those of similar courses offered at Santa Clara.

- Courses from accredited two-year institutions are generally transferable if they are similar to courses listed in the *University of Santa Clara Undergraduate Bulletin*, under the same conditions, and if (in California community colleges) they are designated as University of California transferable. A maximum of 90 quarter units (60 semester units) of academic work, passed with a grade of C or better, taken at a community (two-year) college may be accepted for transfer credit toward a degree at Santa Clara. Work done at other institutions will not be used in calculating grade point averages or class rankings at Santa Clara.

- Courses of a technical or trade nature do not transfer. Courses from regionally unaccredited institutions, trade schools, extension, or correspondence programs do not transfer.

- Students who are already enrolled at the University of Santa Clara and who intend to take courses at other institutions, either while on academic leave or during the summer months, are strongly urged to have these courses approved in advance by the chairman of the major department and by the dean of their college. In this way, the selection of nontransferable courses can be avoided. Appropriate approval forms are available from the Office of the Registrar.

Admission of Foreign Students

Foreign students must present a score in the Test of English as a Foreign Language, which is administered by the Educational Testing Service. The minimum acceptable TOEFL score is 550. Foreign students, both freshmen and advanced standing applicants, must also take the Scholastic Aptitude Test of the College Entrance Examination Board. In order to be issued Immigration Form I-20, the applicant must be accepted as a full-time student working toward a degree.

Student Financial Services

EXPENSES 1984–85

Application Fee **$25.00**
This charge is to be sent with each application form and is not refundable.

Deposits

All new students or students reapplying for admission **$200.00**
This amount is automatically credited to the student's account when paid and is not refundable.

Housing Contract Deposit **$100.00**
The $100.00 deposit must accompany the housing contract. The deposit is refundable on a prorated basis according to the schedule stipulated in the Student Housing Contract.

Tuition and Fees per Quarter
Includes a refundabe fee of $1.00 for student membership in Nor-Cal PIRG.
$2037.00

Part-time Tuition
One (1) term course **$688.00**
Two (2) term courses. Lower division students. **$1,266.00**
Two (2) term courses. Upper division students.
Upper Division students enrolled for at least two (2) courses, regardless of the unit value of the courses, are considered full-time students for tuition purposes and will be charged full-time tuition.

Auditing Fee (per course) **$250.00**

Room and Board per Quarter
Charges During Winter and Spring Recess, by arrangement with the Director of Housing and Residence Life. **$1101.00**
Tuition, Room and Board are due and payable in full on the day of registration.

Fees
Fee for Challenging a Course (per course) **$50.00**
Late Registration Fee **$20.00**
Late Submission of Form Fee (administrative forms, e.g., pre-registration, application for degrees, etc., per day) **$2.00**
Fee for Replacement of Identification Card **$3.00**
Deferment Service Fee **$25.00**
Returned Check Fee **$10.00**
Charge Card Returned Item Fee
(returned unpaid from VISA or Mastercard agency) **$5.00**
Studies Abroad Service Fee **$30.00**
Transcript of grade (rush process) **fee** **$7.50**
Copies of student's transcript of grades
(each copy of transcript) **$2.50**
Graduation Fee **$30.00**

For Graduate Programs in Business, Counseling Psychology and Education, Engineering, Law, and summer session tuition and fees, see announcements of the various graduate programs and summer session.

Registration Cancellation Fee. If a student, after registering, withdraws on the first day of the late registration period before attending any classes, the full refund is subject to a $50.00 registration cancellation fee.

Chemistry Laboratory Courses. Supplies and breakage costs will be charged at the completion of each course.

Special Information. A full-time student who drops courses during the term will be considered full-time for the balance of that term for tuition purposes.

Part-time Students. For tuition purposes, a part-time student is defined as a lower division student taking fewer than three (3) term courses or an upper division student taking fewer than two (2) courses, regardless of the unit value of the course. For financial aid purposes, 6 units is the minimum number of units to be considered enrolled at least half-time.

Charges for loss or damage in residence halls, to other University property, and to special equipment will be billed directly to the student and parents on report of damage or loss.

Method of Payment

Students should come prepared to pay all charges on the day of registration, or should have payments from home in the mail to reach the University by the announced financial clearance date prior to each registration.

Remittances should be made payable to the **University of Santa Clara** and mailed to the Office of Student Accounts.

Students who have unpaid bills at the University or who defer payment without approval are subject to dismissal from the University and, as long as such payments remain unpaid, may not receive transcripts of credit or any diploma.

The University offers a twelve-month Budget Prepayment Plan for those who prefer to pay current charges on a monthly basis.

For those who are not financially able to pay the full-term charges in advance, there are several tuition plans available that are administered by outside financial agencies. Those who plan to avail themselves of one of these services should request information from one of these agencies at least three months prior to registration. Agency names and addresses are available from the Office of Student Accounts.

Guaranteed Tuition Plan

The Guaranteed Tuition Plan is a payment plan where families may prepay up to four years of tuition. The University guarantees that the student's tuition rate will not increase over the prepaid period. Payment of the required prepaid tuition and mandatory fee amount may be made in the following ways

1. A lump sum payment from the family's own resources;
2. A loan in the prepaid amount from a commercial lender, the interest payments from which would qualify as a deduction on the borrower's income tax return.

Refunds

The date on which written notification of withdrawal is received at the Office of Student Accounts will be the effective date on which any refund of tuition will be determined, not the last date of attendance by the student. Where early registration and payment of tuition is required for the winter and spring quarters and written notification of withdrawal is received prior to the first day of late registration, full tuition refund will be processed without penalty (see Registration Cancellation Fee). Appeals for special consideration of individual circumstances will be accepted in writing addressed to the Manager of the Office of Student Accounts.

No refunds will be made because of curtailment of services brought about as a result of strikes, acts of God, civil insurrection, riots or threats thereof, or other causes beyond the control of the University. All fees, charges, and refund schedules in this bulletin are subject to change without prior notice.

Refund of Tuition: Full-time Students

Students who withdraw from the University may receive refunds of tuition according to the following schedule.

For withdrawal prior to the first Monday after instruction begins:
payment refunded minus $436.00

For withdrawal prior to the second Monday after instruction begins:
payment refunded *minus* 598.00

For withdrawal prior to the fourth Monday after instruction begins:
payment refunded *minus* 856.00

No further refunds of tuition will be allowed.

Refund of Tuition: Part-time Students

Students who withdraw from the University may receive refunds of tuition according to the following schedule, per course.

For withdrawal prior to the first Monday after instruction begins:
payment refunded *minus* $245.00

For withdrawal prior to the second Monday after instruction begins:
payment refunded *minus* 283.00

For withdrawal prior to the fourth Monday after instruction begins:
payment refunded *minus* 375.00

No further refunds of tuition will be allowed.

Refund of Room and Board

Students who reside in University residences for less than a full term will be assessed room charges on a prorated basis according to the schedule stipulated

in the Student Housing Contract. Students who are evicted from, move from, or otherwise withdraw from University housing during an academic term and who are not released from the contract will continue to be assessed room charges for the remaining portion of that term.

Refund of unused board will be prorated from the Monday following the date of meal ticket cancellation.

Refunds cannot be processed until one month after the student's withdrawal.

Financial Aid

The University of Santa Clara maintains a broadly based program of scholarships, loans, grants, and part-time employment. Administered by the Office of Financial Aids, these resources help bridge the gap between the cost of education and what parents and students can reasonably contribute.

The financial need of each family is estimated from information supplied on the Financial Aid Form (FAF) or Student Aid Application for California (SAAC).

On the basis of this estimate and any adjustments made by the Aid Office and subject to the availability of funds, the Office of Financial Aids is then able to prepare a "package" of aids for which the student qualifies: a scholarship, loan, grant, or part-time employment under the work study program or any combination of the four.

The cost of a college education today is high, but not prohibitive. A family, therefore, is expected to make a maximum effort to assist the student with college expenses. Financial help from the University and other sources should be viewed only as supplementary to the efforts of the family.

More complete information about the University of Santa Clara Financial Aids program is available in the Student Financial Services bulletin, *Putting It Together*. Specific questions concerning any University of Santa Clara aid program should be addressed to the Director of Student Records and Financial Services.

Applying for Financial Aids

The different aids (scholarships, grants, loans, employment, etc.) vary in amount and are renewable on a year-to-year basis provided the student fulfills the University's requirements and reapplies each year. The amount awarded in each type of assistance may vary from year to year depending on the applicant's family financial circumstances. To apply for financial aid consideration, a student must

1. Complete the Santa Clara Aid Form.
2. Submit a copy of the Financial Aid Form (FAF), or Student Aid Application for California (SAAC), designating that the University of Santa Clara receive a copy (C.S.S. code 4851).
3. Complete an application for a Cal Grant and a Pell Grant as appropriate. The FAF or SAAC may be used as the Pell Grant application.
4. Meet a February 1 priority postmark deadline in applying for scholarships, grants, NDSL loans, or Work Study. Transfer students must supply financial aid transcripts from all previous institutions before they will be considered for aid.

5. Submit copies of the student's and parents' latest federal income tax returns as soon as available but not later than May 1.
6. If an alien admitted to the United States for other than a temporary purpose, provide a copy of the Immigration and Naturalization Service document that verifies the student's entry status.

New undergraduate applicants whose completed applications are on file in the Office of Financial Aids by February 1 preceding September enrollment should be notified about their aid eligibility not later than June 1. Applications that arrive late or incomplete will receive last priority for consideration, and time may not permit notification to the applicant prior to registration.

Financial aid recipients must reapply each year and must submit all necessary documentation not later than May 1. Detailed information may be obtained by consulting the Student Financial Services bulletin *Putting It Together*.

The University supports a limited grant program for disadvantaged students. Students requesting consideration should contact the Office of Financial Aids.

Aid Qualifications

The selection of students to receive financial aid requires evidence of financial need. Once this criterion has been met, priority of consideration is given to applicants with the highest scholastic attainments. Students of exceptional academic merit should write to the Director of the Honors Program.

Scholarship recipients are expected to maintain an overall grade point average of 3.00. All other aid recipients must maintain a GPA of 2.00. All financial aid recipients must remain enrolled as full-time students (minimum of 12 quarter units) for each quarter in which aid is received and must make satisfactory progress toward a degree. Please refer to the section of this bulletin on Academic Standing for specific criteria on good standing and the section on Student Classification for specific criteria on normal progress. Financial aid may be terminated at any time for serious infractions of the University's rules and regulations. As a general rule, graduate and professional students will receive consideration for financial aid after the undergraduate needs have been met. Ordinarily, financial aid is not available for noncitizens unless they are in the United States on a permanent basis and have made application for citizenship. It is the financial aid recipient's responsibility to notify the Financial Aids Office immediately of any changes in address, name, marital status, academic status, or family financial situation.

Eligibility for financial aids is for a maximum of 12 quarters. Request for an extension of this maximum must be addressed in writing to the Office of Financial Aids.

All financial aid awarded will be distributed in equal installments to coincide with the number of academic periods in the year and will be placed as a credit on the student's account at the Office of Student Accounts.

Loans

Because scholarships and grants are limited, many students applying for aid find it most advantageous to finance their education through a loan program.

Among programs available to students are the National Direct Student Loans, Guaranteed Student Loans, and PLUS loans. Further Information may be obtained from the Office of Financial Aids.

Deferred Payment Plans

Santa Clara provides deferred payment plans administered through outside agencies. One to four-year contracts are available. As an alternative to these outside plans, the University offers a Twelve-Month Budget Payment Plan and a Guaranteed Tuition Plan. Detailed information is available from the Office of Student Accounts.

Employment

The University maintains a Placement Center on campus to assist students in securing part-time work. Students who receive financial aid are expected to contribute as much as possible from their own resources to assist in meeting their costs at Santa Clara.

University Expenses

In addition to the undergraduate tuition of $6,111 and room and board of $3,301 per year, the University estimates that students can expect to spend approximately $1,500 on required books and supplies and miscellaneous personal expenses. These estimated expenses will vary from year to year.

Tentative Financial Aid Deadlines for 1984–85 and 1985–86

Please consult the 1984–85 edition of *Putting It Together*, available from the Office of Financial Aids.

December 1, 1984	For winter quarter 1985
February 1, 1985	1985–86 Cal Grants
February 1, 1985	1985–86 new scholarship and grant consideration
February 1, 1985	1985–86 NDSL and Work Study (nonrecipients)
March 1, 1985	For spring quarter 1985
May 15, 1986	1985–86 Pell Grants (apply as early as possible
May 1, 1985	Financial aid renewal

NOTE: All Guaranteed Student Loan Applications must be completed and in the Office of Financial Aids not later than six weeks prior to a registration period. Applications received later than this date will be processed as time allows, normally after registration. Information on the availability of summer school aid will be available from the Financial Aid Office *after* June 15.

These deadlines are tentative and should be confirmed with the Financial Aids Office after October 1984.

ACADEMIC PROGRAMS

THE UNIVERSITY CURRICULUM

Santa Clara's education of "the whole person" requires a program of study that reflects breadth as well as depth, that imparts a common body of knowledge to all students, that develops the capacity for critical judgement and clear expression, and that encourages a desire for lifelong learning.

The University Curriculum, approved by the Board of Trustees in 1981, establishes course requirements to meet seven educational goals:

1. An ability to write clearly and effectively and to read critically (Composition and Literature);
2. An understanding of the history of Western culture and the methods of inquiry characteristic of the humanities (Western Culture);
3. An understanding of another culture through the study of a foreign language (Foreign Language);
4. An understanding of human behavior and the methods of inquiry characteristic of the social sciences (Social Sciences);
5. An understanding of the natural world and the methods of inquiry characteristic of mathematics and the natural sciences (Mathematics and Natural Sciences);
6. An ability to make decisions that are based on ethical principles (Ethics); and
7. An understanding of the religious dimensions of life (Religious Studies).

COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences, comprising the traditional liberal arts disciplines, offers courses in the humanities, arts, social sciences, and natural sciences. The College provides

- the University Curriculum common to the education of all undergraduate students at Santa Clara;

- major programs of study for in-depth education in a variety of traditional academic disciplines;

- courses, beyond the departmental major programs, for further understanding in areas of particular interest to students.

The College confers the Bachelor of Arts degree in Art, Classics, English, French, German, History, Italian, Music, Philosophy, Religious Studies, Spanish, Theatre Arts, and Multidisciplinary Studies.

It confers the Bachelor of Science degree in Anthropology, Biology, Chemistry, Combined Sciences, Computer Science, Economics, Engineering Physics, Mathematics, Physics, Political Science, Psychology, and Sociology.

Special programs in Multidisciplinary Studies and Combined Sciences leading to a Bachelor of Arts and a Bachelor of Science, respectively, provide students the

opportunity of studying issues from the perspective of more than one academic discipline. In addition, a new program in the Department of Music leading to a Bachelor of Music in Performance has been implemented.

BACHELOR OF ARTS. The program of study for the degree of Bachelor of Arts, which consists of a total of 175 quarter units, includes courses that fulfill the goals of the University Curriculum, the College of Arts and Sciences curriculum, and the respective departmental major curriculum.

For the Bachelor of Arts degree, students must fulfill the following University and College requirements.

1. Composition and Literature

Three courses: (a) two courses in Composition and Rhetoric, normally, English 1 and 2; and (b) one course in Writing or in Literature that includes a writing component. This course should preferably be taken after completing 60 quarter units.

2. Western Culture

Three courses outside the major department, in one of the following sequences: (a) English 11, 12, and 13; or (b) History 11, 12, or 13; or (c) Philosophy 11, 12 or 13; or (d) Art History 11, 12 or 13. The three courses in Western Culture should normally be taken in sequence.

3. Foreign Language

Successful completion of the third course of the first-year sequence in a single classical or modern language. Students who have successfully completed four years of study in a single classical or modern foreign language during high school or who demonstrate equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

4. Social Sciences

One course in Social Sciences from the offerings in the departments of Anthropology and Sociology, Economics, Political Science, or Psychology.

5. Mathematics and Natural Sciences

Three courses: (a) one course in Mathematics equivalent to, at least, College Algebra; (b) one course in Natural Science, and (c) one additional course in either Mathematics or Natural Science.

6. Ethics

One course in general or applied ethics from the ethics offerings in the Department of Philosophy.

7. Religious Studies

Three courses in Religious Studies: (a) two courses, normally taken during the freshman and sophomore years — one Introductory Level Religious Studies course and one Intermediate Level Religious Studies course; and (b) one Advanced Level Religious Studies course, taken after completing 88 quarter units. These courses are to be taken in sequence.

8. Fine Arts

One course in studio art or performance.

9. Multicultural Perspective

One course in Ethnic or Women's Studies.

Students must also fulfill the course requirement for the departmental major. For these requirements, consult the departmental description for the respective major: Art, Classics, English, History, Multidisciplinary Studies, Modern Languages, Music, Philosophy, Religous Studies and Theatre Arts.

Depending on the departmental major requirements, students will have a number of elective courses.

BACHELOR OF SCIENCE. The program of study for the degree of Bachelor of Science, which consists of a total of 175 quarter units (180 quarter units for Combined Sciences and Engineering Physics), includes courses that fulfill the goals of the University Curriculum, the College of Arts and Sciences curriculum, and the respective departmental major curriculum.

For the Bachelor of Science degree, students must fulfill the following University and College requirements.

1. Composition and Literature

Three courses: (a) two courses in Composition and Rhetoric, normally English 1 and 2; and (b) one course in Writing or in Literature that includes a writing component. This course should preferably be taken after completing 60 quarter units.

2. Western Culture

Two courses in one of the following sequences: (a) English 11, 12 and 13; or (b) History 11, 12, and 13; or (c) Philosophy 11, 12, and 13; or (d) Art History 11, 12, and 13. The two courses in Western Culture should normally be taken in sequence.

3. Foreign Language

For majors in Social Science: successful completion of the third course of the first-year sequence in a single classical or modern language. Students who have successfully completed four years of study in a single classical or modern

foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

For majors in Mathematics and Natural Sciences: successful completion of the second course of the first-year sequence in a single classical or modern language. Students who have successfully completed three years of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

4. Social Science

One course in Social Sciences from the offerings in the departments of Anthropology and Sociology, Economics, Political Science, or Psychology.

5. Mathematics and Natural Sciences

Four courses: (a) a minimum of two courses in Mathematics and (b) a minimum of two courses in Natural Sciences.

6. Ethics

One course in general or applied ethics from the ethics offerings in the department of Philosophy.

7. Religious Studies

Three courses in Religious Studies: (a) two courses, normally taken during the freshman and sophomore years — one Introductory Level Religious Studies course and one Intermediate Level Religious Studies course; and (b) one Advanced Level Religious Studies course, taken after completing 88 quarter units. These courses are to be taken in sequence.

8. Multicultural Perspective

One course in Ethnic or Women's Studies.

Students must also fulfill the course requirements for the departmental major. For these requirements, consult the departmental description for the respective major: Anthropology, Biology, Chemistry, Combined Science, Economics, Engineering Physics, Mathematics, Physics, Political Science, Psychology, and Sociology.

Depending on the departmental major requirements, students will have a number of elective courses.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ANTHROPOLOGY AND SOCIOLOGY

Professor: Witold Krassowski
Associate Professors: Linda E. Cool, *Chair,* Paul F. Verden
Assistant Professors: Alma Garcia, David R. Huelsbeck, Kichiro K. Iwamoto, John J. Sewart, George D. Westermark

The Anthropology and Sociology Department offers two distinct degree programs leading to the Bachelor of Science in Anthropology or the Bachelor of Science in Sociology. Course offerings in Anthropology cover the four major areas of the discipline: cultural anthropology, linguistics, physical anthropology, and archeology. Courses in Sociology are organized into four main components: social inquiry, social processes and social structure, analysis of social institutions, and applied sociology. A special emphasis in Gerontology is available to interested majors.

A solid undergraduate foundation in Anthropology or Sociology secures the analytical skills needed to undertake professional degree programs (in anthropology, sociology, law, and social services) or to embark on a number of careers (from banking, to management, to research).

Anthropology majors must fulfill the general requirements of the University for the Bachelor of Science degree (see page 24). In addition, they must complete the following requirements.

1. Math 8
2. Anthropology 1, 2, and 3
3. Sociology 1
4. Anthropology 116 (Anthropological Methods), 121 (Contemporary Social Theory), and 190 (Senior Thesis)
5. Five upper division courses in Anthropology. At least one of these must be a culture area course listed as Anthropology 181, 182, 184, 185, 186, and 187.

Sociology majors must fulfill the general requirements of the University for the Bachelor of Science degree. In addition, they must complete the following.

1. Math 8
2. Sociology 1 and either 25 (Individual and Society) *or* 33 (American Society)
3. Anthropology 3
4. Sociology 116 (Sociological Methods), 121 (Contemporary Social Theory), and 190 (Senior Thesis)
5. Five upper division courses in Sociology. Three of these courses must be selected from those listed under Social Processes and Social Structure. The other two may be selected from any other upper division offerings in Sociology.

An average grade of C must be maintained in courses in the major. By the end of the fall quarter of their senior year, majors in both Anthropology and Sociology must complete a senior thesis approved by the faculty of the

department. Majors must have completed the lower division requirements prior to undertaking the senior thesis.

Special Program

Gerontology

Majors in Anthropology and Sociology may concentrate in Gerontology, which examines the adaptation of the elderly to their living environments, to their self-image, and to public attitudes and policies toward them.

In addition to the Bachelor of Science and department requirements, the following courses are required for the concentration in Gerontology:

1. Biology of Aging (Biology 190);
2. Practicum in Aging (Sociology 198); and
3. Three upper division courses selected from the following: Anthropology 172, Psychology 188 or 196, and Sociology 172.

Also possible are less structured concentrations emphasizing Communications, Law and Government, Primary and Secondary Education, or Public Service and Administration. Interested students should consult with their departmental academic advisers.

Anthropology

1. Introduction to Physical Anthropology

The study of the origin and antiquity of man, the fossil evidence for human evolution, primate behavior, and human variation in morphology, serology, and genetics.

2. Archaeology and Prehistory

A survey of the evolution of human culture during the prehistoric period in both the Old World and the New World.

3. Introduction to Social and Cultural Anthropology

The concept of culture, the development and evolution of social and cultural analyses of the major sub-systems of culture (economic, ethnological, social and political organizations, philosophy and world-view), and selected issues of social concern; racism, cultural determinism, cultural relativity.

3.77. Introduction to Social and Cultural Anthropology,

Honors NCX*

4. Vanished People and Civilizations

This course examines "popular anthropology," which comes from the literature widely read and discussed by the general public. Like academic anthropology the course is concerned with humans and their culture, human origins, and the development and understanding of human behavior. Popular anthropology deals with much of the same subject matter and questions as academic anthropology, but its methods, theories, and assumptions differ. This course will evaluate these theories and assumptions in the popular literature in light of current anthropological knowledge.

20. The Anthropology of Evil

A survey of various supernatural explanations used to interpret misfortune in human cultures. Topics include witchcraft, sorcery, demonic possession, and the evil eye. Ecological, psychological, and sociological approaches are used to explore the material.

90. Women and Men in Society§

Anthropological approaches are used to examine the roles and statuses of women and

* Exempted from challenge § Course included in Women's Studies Program

men cross-culturally. The course explores a variety of factors affecting the lives of women and men such as public and domestic realms of activities, political and economic factors, and family and socialization practices. Comparisons are made to the situation of women and men in the United States to determine the origins and future of sex roles in our own society.

91.01 to 91.99. Lower Division Seminar in Anthropology

Seminar for freshmen and sophomores on selected issues in social and cultural anthropology. By permission of the instructor only. NCX*

116. Anthropological Methods

Considers the logic of research procedures as well as the theoretical and practical issues arising from anthropological research. The skills and methods of designing and analyzing research are explored in terms of readings and exercises. The outcome of the course will be the students' design of an original research proposal. Required for juniors majoring in anthropology. *Prerequisites: Math 8, Anthropology 3 and 121, or permission of the instructor.* NCX*

118. Introduction to Social Theory

Analysis of the works of major theorists who have influenced sociology and anthropology. Emphasis on Marx, Durkheim, Weber, the content and historical context of their approaches, the value and problems of their legacy.

121. Contemporary Social Theory

In-depth treatment of recent innovations and developments in social thought. Emphasis on explaining what is essential about particular theoretical frameworks, how they can be used, and why they should be given attention.

130. Primatology

A survey of the social behavior and organizations of monkeys and apes as known from laboratory and field studies. Their relevance to the evolution of human behavior and social groups is also examined.

135. Human Diversity

A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach (both molecular and populational). Topics also include theories of racial origins and the selective bases of human variation.

147. African Prehistory

A survey of the prehistoric cultures of Africa from earliest human occupation to European contact.

148. Old World Prehistory

A survey of the prehistoric cultures of Africa, Europe, and Asia during the Pleistocene period.

149. North American Prehistory

A survey of the prehistoric cultures of North America and Northern Mexico from earliest human occupation to European colonization.

150. Anthropology of Religion

The nature of religious beliefs in other cultures. The relation of religion to culture, personality, and social organization. Analysis of anthropological theories concerning the evolution and functions of religious belief, myth, and ritual.

151. Anthropology of Law

This course examines current issues in the anthropology of law and conflict. Consideration will be given to variations in conflict and conflict management in "primitive" and "modern" societies, the basis for social control in human society, and the relationship between social structure, politics, values, and law in human social systems.

152. Political Anthropology

Problems of defining and studying political behavior in non-Western cultures. Effects of social, cultural, and environmental factors on political organization in selected societies. Emphasis on comparison of analytical assumptions of different authors.

155. Psychological Anthropology

The interrelationships among cultural, social, and psychological factors in human

* Exempted from challenge

behavior. *Prerequisites: one course in anthropology and one course in psychology.*

156. Sociolinguistics

Language as context, referent, and dimension of social behavior. An interdisciplinary examination of language in society: ethnography of speaking, cognition, bilingualism, social dialects, language change, and language planning.

157. Family and Kinship§

The general aim of this course is to develop an understanding of the variety of ways in which kinship and family life can be organized as well as the causes and consequences of different family patterns. The course examines how families differ across cultures, over time, and among different groups in the United States.

158. Anthropology of Development

The effects of change on people's lives in Third World countries. Cultural and social change will be examined in concrete instances studied by anthropologists. Included are theories of change and the relevance of applied anthropology.

172. Anthropology of Aging

Cross-cultural examination of the aging process in a range of human societies. Emphasis on level of technology, degree of urbanization, rate of social change as well as social, political, and cultural differences in understanding how old people adapt to, and cope with, the modern world.

181. Peoples and Cultures of the Pacific

This course examines the societies of the three culture areas of the Pacific: Melanesia, Micronesia, and Polynesia. Archeological, ethnographic, and historical evidence are used to compare ecological adaptations, social organization, belief systems, and acculturation in each region.

182. Peoples and Cultures of Melanesia

An in-depth examination of societies found in the South Pacific nations of Papua New Guinea, Solomon Islands, and Vanuatu (formerly New Hebrides) as well as Indonesian Irian Jaya and French New Caledonia. Both the traditional and modern situations are explored with emphasis on the region's relevance for anthropological theory.

184. Anthropology of Mediterranean Europe

Examination of the similarity and diversity of the cultures of Mediterranean Europe. Emphasis on modes of social relationships such as patronage and on cultural factors such as the concepts of honor and shame. Economic development and change in rural communities and the urbanization of migrants.

185. Peoples and Cultures of Mexico

A survey of both prehistoric and contemporary societies of Mesoamerica. The course will emphasize the relationship between ancient and modern Mexican cultural systems.

186. North American Indian Ethnography†

The range of variation of North American Indian cultures from the Arctic to Mexico; the concept of culture area; modern reservation conditions.

187. Peoples and Cultures of Africa

A general anthropological view of the major institutions of sub-Saharan. Africa, as exemplified through their appearance in a wide variety of cultures. Both ethnographic accounts and theoretical issues are discussed.

190. Senior Thesis

Senior majors will complete their theses under the guidance of faculty advisers and will make seminar presentations of their work. NCX*

193.01 to 193.99. Advanced Seminar in Anthropology

Seminars for juniors and seniors on selected topics in social and cultural anthropology. By permission of the instructor only. NCX*

196. Archaeological Method and Theory

This course is an introduction to the techniques of discovery and analysis that ar-

* Exempted from challenge § Course included in Women's Studies Program
† Course included in Ethnics Studies Program

chaeologists have found useful in research. Special attention is given to sampling techniques in survey and excavation. Other topics to be discussed will include classification techniques for measuring parameters of prehistoric demography, diet, craft specialization and exchange.

197.1, 197.2. Field Course in Archaeological Method

Six weeks of on-site archeological field research. Students will learn through practical experience the basic techniques of excavation and field analyses. By permission of the instructor only. NCX*

198.1, 198.2, 198.3 Practica

Opportunity for students in good standing to work and conduct anthropological analyses in community agencies, government bureaus, and political or industrial organizations. May be taken on a part-time basis as a one- or two-term equivalent or on a full-time basis as a three-term course. Written application for this course must receive departmental approval prior to registration. NCX*

199.1, 199.2, 199.3. Directed Reading/Directed Research

For students who wish to do intensive reading in areas not emphasized by the department, or to do further independent research on specific topics not fully covered in departmental courses. Written application for this course must receive approval from the department and the Dean's Office prior to registration. NCX*

SOCIOLOGY

Introductory and Survey Courses

1. Principles of Sociology

An introduction to the field of sociology with emphasis on the major sociological perspectives and the basic elements of sociological analysis. Introductory exposure to research methodology.

1.77. Honors Seminar in Principles of Sociology

Restricted to students in the University Honors program. Major issues in sociology. NCX*

25. Self/Other in Society

Introduction to social psychology. As a field of study, social psychology is the nexus of the social sciences. Its basic issues involve the intersection of personal, social, and cultural questions. Will examine such topics as the nature and boundaries of the self, self/other relations and groupings, interpersonal communication, and power and influence relations.

33. American Society

Examines contemporary social problems and issues in American society from a sociological perspective. Focuses on such issues as the changing family, gender roles, poverty, racism, crime and violence, and international conflict.

48. Bureaucracy and Society

Introduction to bureaucratic structures in American society. Examines various types of formal organizations such as industrial organizations, prisons, mental hospitals, and the Federal government and their consequences on society.

57. Sex Roles, Self, and Society§

This course examines the development, characteristics, and consequences of female and male sex roles in contemporary society.

65. Crime and Delinquency

A broad survey of major issues surrounding the causes and nature of, and solutions to, the problem of crime and delinquency in the United States.

68. Sociology of Sport

One of the newest and most exciting fields in sociology is the study of sport. This course will present a broad sociological profile of the institution of sport, its historical development, its functions for the individual society, and its interrelationships with other social institutions such as the

* Exempted from challenge § Course included in Women's Studies Program

political, economic, religious, etc. Topics include the professionalization of sport, fan and player violence, the influence of mass media, race and sport, and women and sport.

Inquiry Courses

116. Methods of Social Research

Introduction to the logic and strategies of social research including field studies, archival research, comparative analysis, and experimental design. Students will examine and critique examples of each type of research from the social science literature and will design a research project of their own. *Prerequisites: Math 8, Sociology 1 and 121, or permission of the instructor.* NCX*

117. Introduction to Survey Research

This course focuses on the formulation, design, and analysis of survey research. In particular, students will be introduced to analysis of quantitative data using SPSS, a computer software system. *Prerequisites: Mathematics 8 and Sociology 116.* NCX*

118. Classical Social Theory +

Analysis of the works of major social thinkers who have profoundly influenced the way we view the world today. Emphasis is on the work of Comte, Marx, Dilthey, Simmel, Durkheim, Freud, and Weber. Recommended for students planning graduate studies.

121. Contemporary Social Theory

In-depth treatment of recent innovations and developments in social thought. Emphasis is on explaining what is essential about particular theoretical frameworks, how they can be used, and why they should be given attention. Consideration will be given to several of the "New Sociologies"—critical theory, phenomenology, existential sociology, hermeneutics, western Marxism, semiotics,—in order that we may appreciate how each perspective illuminates a portion of reality.

123. Philosophical Foundations of the Social Sciences

The purpose of this course is to provide the social science student who has no or little background in philosophy with a straightforward introduction to the philosophical issues raised by the study of social and human behavior. Topics covered include the understanding, explanation, and prediction of social action; the role of values in social inquiry; problems of bias, objectivity, and ethics in social research.

Social Processes and Social Structure

125. Social Psychology

The study of individuals in social contexts. Topics include perception, social influence, persuasion, interpersonal attraction, power, status and norm formation, and conformity.

126. Socialization

The learning of norms and values throughout the life cycle, with an emphasis on the social structures within which socialization occurs.

127. Small Groups

The structure and social processes that occur in small groups. Topics include power and prestige, leadership, communication networks, game theory, and distributive justice.

129. The Process of Communication

Communication as a sociopsychological and cultural process. Examination of the nature, elements, and patterns of the communication process on the individual, interpersonal, small groups, and organizational levels.

* Exempted from challenge + Recommended For students planning Graduate Studies

132. Social Stratification

Analysis of the principal lines of social cleavage within American society. Focus is on the racial, sexual, ethnic, occupational, and class divisons prevalent in the contemporary world. Specific topics treated include affirmative action and reverse discrimination, IQ and race, exploitation, elites and ruling classes, under- and unemployment, poverty, the position of blue-collar and white-collar workers, the position of women in the labor force, and housework.

133. Sociology of Development

Focuses on social and political change in the Third World. Explores the relationship between economic and social development and the emergence of democratic, authoritarian or revolutionary regimes in Africa, Asia, and Latin America. Emphasizes the ways in which the international system influences development through investigation of theories of interdependence, dependency, and neo-imperialism.

135. Advanced Seminar in Sociology of Development

This seminar will review theories and major research directions in the sociology of development. A critical analysis will be made of several key issues in the field with special emphasis on educational development, urbanization, agriculture, inequality, and the role of multinationals. The major strategies of social and economic development of a select number of Third World countries will be assessed.

136. Deviant Behavior

Examination of such deviant behavior as crime, mental disorder, and alcoholism. Social factors in the etiology and control of deviant behavior.

137. Social Change

Significant trends and issues in contemporary American society and in the world. The utility of sociological concepts and principles in understanding contemporary society.

138. Demography

Examination of demographic issues in the modern world. An introduction to the study of population including population measures, patterns of growth, and problems of quantity, quality, composition, distribution, and migration. Includes population policies: population, environment, natural resources, and the quality of life.

148. Complex Organizations

Examination of bureaucracy, the fundamental social organization of modern society. Focuses on the structural characteristics and consequences of living in a bureacratic society. Examples drawn from industrial organizations, mental institutions, prisons, and universities.

Social Institutions and Applied Sociology

151. Sociology of Sex Roles

A sociological analysis of sex differences and sex role inequalities including an examination of cross-cultural, historical, and contemporary U.S. materials.

153. Minority Women in the United States†

An examination of the economic, social, political, and cultural experiences of minority women (Chicanas, Blacks, Asian Americans, and American Indians) in the United States.

157. Family and Kinship§

Marriage, the family, and kinship are studied both in our own society and in cross-cultural perspective.

162. Political Sociology

This course treats the phenomena of political power, organization, and authority as the most crucial aspects of social life and human existence. Topics include the problems of legitimation of political systems, political ideologies, participation in the political sphere, the role of the elites, state involvement in the economy, and the politics of social change in the advanced industrial societies.

† Course included in Ethnics Studies Program § Course included in Women's Studies Program

163. Industrial Sociology

Examination of the ideological and institutional characteristics of modern industrial society and some of its basic problems, such as alienation, affluence and the work motivation models, primary group influences, and leadership behavior.

164. Collective Behavior

Analytical study of collective behavior principles; typology of crowds, mass behavior and the characteristics of publics. Introduction to social movements.

166. Sociology of Crime

No understanding of crime can proceed without an understanding of the socioeconomic, cultural and political nature of the existing society within which crime occurs. This course to explores the relationship between crime and society. Topics include the dicussion of theories of criminal behavior, white-collar crime, the death penalty, juvenile crime, women and crime, prisons, and the philosophy of punishment.

168. Sport and Modern Society

In-depth analysis of selected themes in the study of sport as a microcosmic manifestation of American society as a whole. Emphasis is on the profound changes sport has undergone during the modern industrial era—i.e., the bureaucratization, professionalization, commercialization, and rationalization of sport. The politics of international sports will also be emphasized.

169. Popular Culture

A sociohistorical analysis of shifting currents and significant trends in the development of popular mass culture activities in America from 1900. Special emphasis will be given to the continued presence of folk and ethnic art forms (including music, dance, and humor) and the emergence of a mass entertainment industry.

172. Sociology of Aging

Introduction to social gerontology. Theoretical approaches and research in social gerontology; the elderly—public attitudes, self-image, social bonds, living environments, public policies, programs, and major problem areas; death and dying.

173. Work and Leisure

An exploration of past, present, and future work and leisure in human culture. The apparent complementary nature of work and leisure will be examined in terms of cultural context, selected social institutions, systems of stratification, technology, social role, and self-concepts. Course materials will include a consideration of the changing meaning of such terms as time, wealth, alienation, and sloth.

175. Race and Inequality†

This course will analyze the socioeconomic and political situation of Blacks, Hispanics, Asians, and American Indians in contemporary American society and the origin and nature of the problems created by racial inequality. Topics covered include race and class; occupational and economic inequality; affirmative action policies; the history of racial discrimination; the "culture of poverty"; cultural stereotyping; resistance to change.

179. Mass Communication and Mass Media

A sociopsychological and cross-cultural examination of the nature and characteristics of mass communication and of its impact on the individual and society. Mass media: their functions and dysfunctions, structure, controls, and ethical issues. International communication.

Pre-Professional Studies

190. Senior Thesis

Senior majors will complete their theses under the guidance of faculty advisers and will make seminar presentations of their work. NCX*

193.01 to 193.99. Advanced Seminars in Sociology

Seminars for junior and seniors on selected issues in sociology or current problems of social relevance. NCX*

* Exempted from challenge † Course included in Ethnics Studies Program

198.1, 198.2, 198.3. Practica

Opportunity for students in good standing to work and conduct sociological analysis in community agencies, government bureaus, and political or industrial organizations. May be taken on a part-time basis as a one- or two-term equivalent or on a full-time basis as a three term- course. Written application for this course must receive department approval prior to registration. NCX*

199.1, 199.2, 199.3. Directed Reading/Directed Research

Opportunity for students who wish to do intensive reading in areas not emphasized by the department, or to do further independent research on specific topics not fully covered by departmental courses. Written application for this course must receive approval from the department and Dean's Office prior to registration. NCX*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ART

Associate Professors: Brigid S. Barton, Samuel R. Hernandez, *Chair*
Assistant Professors: Robert Kelly Detweiler, Susan J. Felter
Lecturers: Gerald P. Sullivan, S.J., Jan Thompson

The Art Department offers a major program in the production and history of art as well as elective or required courses for nonmajors.

Art majors may choose an emphasis in studio practice or art history as a preparation for graduate studies directed toward teaching or research in art history, museum studies, or commercial or fine arts. In addition to completing the major requirements specified below, Art Majors must fulfill University and Bachelor of Arts requirements (pg. 23).

Studio Art Emphasis. The following lower division sequence is required in the freshman and sophomore years: Introduction 10, Drawing 33, Sculpture 54, Photography 15, Art History 12 and 13. Six upper division studio courses and two upper division art history courses are also required.

Art History Emphasis. The following lower division sequence is required in the freshman and sophomore years: Introduction 10, Drawing 33 *or* Sculpture 54, Art History 11, 12, and 13. Six upper division art history courses and two upper division studio courses are also required.

Art majors should select a core curriculum sequence outside the major from World Literature, Western Civilization, or the History of Philosophy.

Proper credentials will admit a student to the art building after closing time and on weekends until 10:30 p.m. A lab fee may be exacted for all studio courses to help defray the cost of materials.

STUDIO ART

10. Introduction to Studio Art

Introduction to fundamental principles and techniques of two- and three-dimensional art. This studio course presents such concepts as color, composition, light, and the reductive, manipulative, and additive methods of sculpture.

15. Basic Photography

Introduction to photography as a creative art form. This studio course includes basic black and white developing and printing techniques, film characteristics, and lighting. Extensive work is required in the darkroom with an emphasis on creative expres-

* Exempted from challenge

sion. Camera required with manual shutter speed and aperture capabilities.

33. Basic Drawing

An introductory studio course in various drawing media and techniques as well as in the problems of self-expression involved in traditional and contemporary drawing.

43. Basic Painting

An introductory studio course in the basic skills and concepts requisite for self-expression in painting media with an emphasis on color and composition.

46. Basic Watercolor

An introductory studio course in techniques and materials of watercolor painting.

53. Basic Ceramics

Introduction to three-dimensional problems, materials, and techniques. A studio course including hand-building, mold-making, glazing, and firing.

54. Basic Sculpture

Introduction to the fundamentals of art in a three-dimensional form. A studio course including materials and techniques as well as the problems of expression peculiar to this art.

60. Basic Printmaking

An introductory studio course in printmaking involving a combination of methods: intaglio (etching), silkscreen, lithography.

63. Basic Silkscreen

An introductory studio course in the techniques and concepts of silkscreen printing as an art form.

64. Basic Lithography

An introductory studio course in the techniques of lithography (printing from stones) as an art form.

67. Basic Etching

An introductory studio course in intaglio printing techniques on metal plates through a process of drawing and etching with acids.

97. Special Projects

A course for lower division students who want to do an art project not covered in the catalogue. This will be under the direction of a member of the Art Department faculty. There will be group meetings with the teacher to discuss progress. May be repeated for credit. Open to majors; non-majors with permission of instructor.

101. Photography

This course explores advanced procedures in black and white photography, with strong emphasis on individual expression and experimentation with different types of cameras. *Prerequisite: Basic Photography or permission of instructor.* May be repeated for credit.

131. Life Drawing

Drawing from life stressing composition, anatomy, and creative drawing. This is a studio course. *Prerequisite: Basic Drawing or permission of instructor.* May be repeated for credit.

143. Painting

A studio course emphasizing further study of various styles, techniques and media in painting. *Prerequisite: Basic Painting or permission of instructor.* May be repeated for credit.

146. Watercolor

A studio course emphasizing a further study of the techniques and materials of watercolor painting. *Prerequisite: Basic Watercolor or permission of instructor.* May be repeated for credit.

153. Ceramics

Advanced ceramics procedures will be emphasized—slip casting, throwing on the wheel, combinations of various materials. *Prerequisite: Basic Ceramics or permission of instructor.* May be repeated for credit.

154. Sculpture

A continuation of the basic studio course in sculpture. *Prerequisite: a Basic Sculpture or Ceramics course, or permission of instructor.* May be repeated for credit.

160. Printmaking

A studio course emphasizing further study of various styles, techniques, and media in printing. *Prerequisite: Basic Printmaking or permission of instructor.* May be repeated for credit.

163. Silkscreen

A continuation of the basic studio course in silkscreen. *Prerequisite: Basic Drawing or any Basic Printmaking course, or permission or instructor.* May be repeated for credit.

164. Lithography

A continuation of the basic studio course in lithography. *Prerequisite: Basic Drawing or any Basic Printmaking course, or permission of instructor.* May be repeated for credit.

167. Etching

A continuation of the basic studio course in etching. *Prerequisite: Basic Drawing or any Basic Printmaking course, or permission of instructor.* May be repeated for credit.

197. Special Projects

A course for advanced students who want to do an art project not covered by the courses in the catalogue under the direction of a member of the Art Department faculty, and who are willing to meet in a group to discuss their progress with each other and with the teacher. May be repeated for credit. Open to majors; nonmajors with permission of instructor.

199. Directed Research/Creative Project

Tutorial work in the area of Studio Art or Art History. By permission of the Chair of the Art Department, the Dean, and the Instructor.

ART HISTORY

11. Art History: Ancient Through Medieval

A survey of art and architecture of the ancient and medieval worlds with a strong interdisciplinary emphasis. Major monuments such as the Parthenon and Gothic cathedrals will be treated in greater depth. This lecture course with Art History 12 and 13 constitutes a core curriculum sequence, but can be taken separately.

12. Art History: Renaissance Through Baroque

A survey of the painting, sculpture, and architecture of the period from the Renaissance through the Baroque with a strong interdisciplinary emphasis. The art of Leonardo da Vinci, Michelangelo, Bernini, Rembrandt, and Rubens will be studied in greater depth. This lecture course with Art History 11 and 13 constitutes a sequence, but can be taken separately.

13. Art History: Rococo Through Contemporary

A survey of painting, sculpture, and architecture from the eighteenth century to the present with an interdisciplinary emphasis. This lecture course with Art History 11 and 12 constitutes a core curriculum sequence, but can be taken separately.

80. History of Film

This course will deal with the nature of motion pictures as a unique and composite art and will include historical and contemporary examples. This lecture course gives consideration to significant and representative, narrative, documentary, and experimental films.

97. Special Projects

A course for lower division students who want to do an art project not covered in the catalog. Under the direction of a member of the Art Department faculty. There will be group meetings with the teacher to discuss progress. May be repeated for credit. Open to majors; nonmajors with permission of instructor.

170. Ancient Art

Analysis of the visual arts and culture of the ancient world. A lecture course with special emphasis on Greek art.

174. Medieval Art

This course will explore and analyze the various manifestations of the visual arts and culture of the Middle Ages, beginning with the earliest emergence of early Christian and Byzantine art through the Gothic period. Architecture, sculpture, and painting will be examined in the context of the development of European aesthetic consciousness. A lecture course.

175. Italian Renaissance Art

Painting, sculpture, and architecture in Italy from the thirteenth to the sixteenth centuries. Emphasis will be placed on the accomplishments and the styles of the major figures of the period. A lecture course.

176. Northern Art in the Renaissance Period

A study of the visual arts in northern Europe during the Late Gothic and Northern Renaissance periods. The work of Jan van Eyck, Hieronymous Bosch, Pieter Bruehgel the Elder, and Albrecht Durer will be studied in greater depth in this lecture course.

178. Baroque Art

This lecture course is a survey of the art of the seventeenth century throughout Europe, including painting, sculpture, and architecture. Special emphasis will be given to Rembrandt, Rubens, Bernini, Borromini, and Velasquez.

181. American Art

This lecture course will chronicle the rise and development of an American expression in the arts, from the earliest manifestations in the gravestones of seventeenth-century New England to the move toward international recognition in the twentieth century. Examples of American painting, sculpture, and architecture will be studied with a view toward arriving at a broadened understanding of the forces that shaped the specific American point of view in the visual arts.

183. Nineteenth Century Art: 1780–1880

A study of the movements of Neoclassicism, Romanticism, and Realism in the context of nineteenth-century culture in Europe and America. Examples of painting, sculpture, and architecture will be analyzed in relation to major historical changes in this period.

184. Twentieth Century Art: 1880–1940

An analysis of Post-Impressionism, Cubism, Expressionism, Surrealism, and other important early modern movements. Painting, sculpture, and architecture will be analyzed in relation to major historical trends up to World War II. A lecture course.

185. Contemporary Art: 1940–1970s

A survey of contemporary developments in the arts from the events leading up to Abstract Expressionism to the present, including photography, performance, and the more traditional arts of painting, sculpture, and architecture. A lecture course with field trips.

*189. History of Women Artists**

This lecture course will attempt to balance the customary approaches in the history of art with an overview of the contributions of women artists to the ongoing historical development of Western visual productions.

190. Museum Studies

A practicum in the varied aspects of museum work. This course will Include field trips and guest lecturers from Bay Area museums. By permission of the instructor.

191. Seminar in Arts Administration

Interdiscipliary studies in Fine Arts, Music and Theatre Arts in the problems of art administration (c.f. Music, Theatre Arts).

197. Special Projects

A course for advanced students who want to do an art project not covered by the courses in the catalogue under the direction of a member of the Art Department faculty, and who are willing to meet in a group to discuss their progress with each other and with the teacher. May be repeated for credit. Open to majors; nonmajors with permission of instructor.

* Exempted from challenge

199. Directed Research/Creative Project

Tutorial work in the areas of Studio Art or Art History. By permission of the Chair of the Art Department, the Dean and the Instructor.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF BIOLOGY

Professors: Francis R. Flaim, John S. Mooring, Geraldine A. Tomlinson
Associate Professors: William R. Eisinger, Thomas N. Fast, *Chair*
Assistant Professors: Linda D. Caren, Susan E. Germeraad, Howard P. Riessen

The Department of Biology offers a program leading to the Bachelor of Science Degree. The major prepares students for advanced studies in graduate or professional schools, teaching in secondary schools, or entry into a career in government or industry.

Requirements for Major

In addition to completing the University and College requirements for the Bachelor of Science degree (see page 24), biology majors must complete the following requirements.

1. Biology 30, 31, 32, 33, and 34; Chemistry 1, 2 and 35, 36
2. Physics 104 and 105 or Physics 4, 5, 6
3. A minimum of seven upper division biology courses, five of which must include laboratory (to be selected in consultation with a faculty adviser)
   a. Students will be required to complete at least one upper division course from each of the following categories: Animal, Plant, Cell, and Population Biology. A single course may not satisfy the requirement in more than one category.
   b. An overall C average must be maintained in biology courses.
   c. Seniors are required to take the Graduate Record Examination in Advanced Biology during the last year of residence. The results of the examination must be received by the department by June 1; seniors must select an examination date with this deadline in mind.
4. Mathematics 11 and 12, or 6 and 7

Recommendations For Majors

1. Chemistry 10 and 37 and Statistics (Biology 160 or Mathematics 8) for students considering graduate and professsional schools
2. Spanish for students considering careers in the health sciences; German or French suggested for graduate school
3. A full year of calculus (Mathematics 11, 12, 13) for students considering graduate and professional schools
4. Biology 40 for students considering careers in health sciences
5. Certain professional schools in the health sciences require a full year of physics with lab.

Single-Subject Credential Program

The present Biology Curriculum satisfies the requirements for the Single-Subject Credential Program in Education (p. 163). Students are advised to consult with the Director of Teacher Education in their junior year for the details of application to the program and advisement.

Honors Program

Honors students in Biology are encouraged to take Biology 198 and honors courses in other departments.

Research Opportunities

Students are encouraged to become involved in original research as part of their undergraduate training. Most faculty involve students in their research, and opportunities exist at neighboring institutions. Course credit can be obtained for research work by enrolling in Biology 198.

9. Human Biology

An introduction to human structure and function including early embryonic development. Laboratory 30 hours. *Recommended prerequisite: a high school biology course.* Credit will not be given to a student who has completed Biology 101. Nonmajors only.

30. Cells and Heredity

An introduction to cell biology including a descriptive study of plant and animal cells and their organelles, as well as an examination of Mendelian genetics. Laboratory 30 hours. *Prerequisite: Concurrent enrollment in Chemistry 1.*

31. Botany

A survey of the plant kingdom combined with an introduction to plant morphology, anatomy, physiology, and development. Laboratory 30 hours. *Prerequisite: Biology 30 and Chemistry 2.*

32. Introduction to Zoology

Study of the diversity and evolutionary relationships within the animal kingdom. Systematic analysis of the major animal phyla: structure, function, and adaptations of both vertebrates and invertebrates. Laboratory 30 hours. *Prerequisites: Biology 30 and concurrent enrollment in Chemistry 2.*

33. The Biology of Populations

A survey of the physical and biological factors that determine the distribution and abundance of organisms. Laboratory 30 hours. *Prerequisites: Biology 31, 32 or equivalent.*

34. Cell Biochemistry and Physiology

An introduction to the metabolic processes of cells, including the biochemistry of cell components, pH, pK, and buffers. Anabolism and catabolism of carbohydrates, lipids, proteins and nucleic acids. Laboratory 30 hours. *Prerequisites: Biology 30, Chemistry 35 and 36 (Chemistry 36 may be taken concurrently) or permission of instructor.* Biology 32 recommended.

40. Organismal Biology

This course is intended to supplement the "30 Series" in topics relating to human anatomy and physiology and is recommended especially for students planning careers in the health sciences. The relationships between structure and function in the human body will be emphasized. Topics will include embryology, functions of excitable tissues, fluid and ionic balance, nutrient utilization, metabolic balance, and an introduction to endocrine functions. *Prerequisites: Biology 30, 32, and 34.* NCX*

* Exempted from challenge

43. Human Ecology

An examination of the relationship between humans and their environment including resource depletion, energy requirements, pollution, food production, and population problems. Nonmajors only.

75. Human Nutrition

The nature and roles of basic nutrients and the accessory factors, vitamins and minerals, in maintaining human health. The application of the principles of nutrition to dietary management, vitamin deficiency diseases, and other nutritional topics of current interest. Nonmajors only.

80. Introduction to Marine Science

Biology of the marine environment, including a survey of marine organisms and their adaptations to various habitats. Physical and chemical factors in oceanography, marine pollution. Nonmajors only.

85. Microbes and Man

The nature of the scientific method, as exemplified by the interaction of microorganisms and humans. Microbial ecology, human diseases, immunity, allergy, the microbiology of food, and recombinant DNA research are discussed. Nonmajors only.

99. Special Topics

Investigation of a specific area or topic in the biological sciences. Open to nonmajors as well as majors.

101. Vertebrate Anatomy

Comparative structure, organization, adaptation, classification. Laboratory 60 hours. *Prerequisites: Biology 30, 32 or equivalent.*

104. Biology Seminar

Selected topics in biology. *Prerequisite: upper division standing in biology.* NCX*

107. Histology and Cytology

Cells, basic tissue types, structure and histogenesis. Basic histological techniques. Laboratory 60 hours. *Prerequisites: Biology 32, 34 or equivalent.*

108. Hematology

The development, characteristics, regulation, and interactions of components of blood and related tissues, with emphasis on hemoglobinopathies, anemias, leukemias, thrombocytopenias, coagulation, and clotting factor disorders. Laboratory 30 hours. *Prerequisites: Biology 30, 32, and 34, or equivalent, or permission of instructor.*

110. Genetics

A study of the basic principles governing inheritance and gene expression in viruses, procaryotes, and eucaryotes, with an emphasis on molecular aspects. Laboratory 30 hours. *Prerequisites: Biology 30, 34, and Chemistry 35 and 36 or equivalents.*

112. Pathogenic Microbiology

Identification, pathogenesis, epidemiology, prevention, and control of medically important bacteria, rickettsiae, fungi, viruses, and parasites. Host resistance and immunity for each disease and the techniques to assess these are discussed. Laboratory 60 hours. *Prerequisite: Biology 113 or equivalent.* Not offered in 1984–85.

113. General Microbiology

Characteristics of microorganisms: bacteria, fungi, viruses, rickettsiae. The isolation and biochemical identification of bacteria are emphasized. Microbial physiology is stressed. Laboratory 60 hours. *Prerequisites: Biology 30 and 34 or permission of instructor.*

114. Immunology

Principles, mechanisms and techniques of humoral and cellular aspects of the immune response, including immediate and delayed hypersensitivity, tissue transplantation, tumor immunology and immunodeficient states in humans. Laboratory 30 hours. *Prerequisite: Biology 30, 32, and 34 or permission of instructor.*

115. Animal Development

Developmental phenomena as observed at the cellular and organismal level with special emphasis on gene interaction in differentiation, morphogenesis, and growth. Laboratory 60 hours. *Prerequisite: Biology 34; Biology 110 is recommended.*

* Exempted from challenge

118. General Parasitology

Parasitic animals and plants, evolution and energetics of symbiotic interactions, medically important parasites and vectors, parasite-host adaptations and physiology. Laboratory and field work 60 hours. *Prerequisite: Biology 32 or equivalent.* Not offered in 1984–85.

124. Animal Physiology

Basic functions of major organ systems. Topics include heart and circulation, respiration, renal function, electrolyte and fluid balance, digestion and absorption. Selected experiments in the laboratory demonstrating endocrine function, nerve conduction, metabolism, muscle function. Laboratory 60 hours. *Prerequisites: Biology 32 and 34; Biology 40 is recommended.*

125. Plant Physiology

An examination of the physiological processes of plants with an emphasis on current research in the field. Laboratory 30 hours. *Prerequisites: Biology 31 and 34.*

128. Plant Development

Study of plant development with emphasis on the experimental approach and current research. Laboratory 30 hours. *Prerequisites: Biology 31 and 34.*

130. Economic Botany

A critical analysis of plant food production potentials with special consideration of modern approaches to pest control and crop improvement. Required field trips. *Prerequisites: Biology 31 and 34.* NCX*.

132. Field Botany

Field study of vascular plants, especially the seed plants of California; their identification, distribution, and ecology. Laboratory 60 hours. *Prerequisite: Biology 31 or equivalent.*

140. Invertebrate Biology

Invertebrate physiology, anatomy, behavior, and ecology, with emphasis on the fauna of California. Laboratory and field work 60 hours. *Prerequisite: Biology 32 or equivalent.* Not offered in 1984–85.

156. General Ecology

Quantitative study of the interrelationships of organisms with their biotic and abiotic environments. Emphasis is on population dynamics, interspecific relationships, community structure, and ecosystem processes. Laboratory and field work 30 hours. *Prerequisites: Biology 33 and Mathematics 7 or 11.*

157. Marine Ecology

Biology of the marine environment, emphasizing community and population interactions with biotic and physical factors. Diversity, energetics, and population ecology of marine organisms. Laboratory and field work 60 hours. *Prerequisites: Biology 33 and Mathematics 8.* Not offered in 1984–85.

158. Freshwater Ecology (Limnology)

Study of the biological, physical, and chemical properties of lakes, ponds, and streams. Emphasis is on the population dynamics, life histories, and adaptations of freshwater organisms, their interactions, and community structure. Laboratory and field work 60 hours. *Prerequisite: Biology 33.*

160. Biostatistics

Basic statistical methods and their biological applications. Probability theory, sampling, estimation, hypothesis testing, regression, correlation, analysis of variance, mathematical modeling, and the design and analysis of experiments. *Prerequisite: Mathematics 7 or 11 or equivalent.* Not offered in 1984–85.

171. Chemical Biology

Chemistry of biologically important compounds. Reactions and interactions of amino acids, proteins, carbohydrates, lipids, nucleic acids, hormones, vitamins and steroids. Nutrition. *Prerequisites: Biology 34 (with a grade of C or better) and Chemistry 37 or 38 or permission of instructor.* NCX*

172. Biochemical Techniques

A laboratory course designed to acquaint those students who have had a lecture course in advanced biochemistry with clas-

* Exempted from challenge

sic and current biochemical techniques. *Prerequisites: Biology 34 and 171 (or equivalent courses) with a grade of C or better, or permission of instructor.* Laboratory 80 hours. Not offered in 1984–85.

173. Evolution

The basic principles of organic evolution, with emphasis on the modern synthetic Theory of Evolution. *Prerequisite: Biology 33 or permission of instructor.*

180. Principles of Human Heredity

Human genetics, with an introduction to human reproductive physiology and embryology. Discussion of current techniques in reproductive and genetic manipulation, and the social issues which they raise. *Prerequisite: previous biology course (high school or college level) or permission of instructor.* Nonscience majors only. NCX*

190. Contemporary Issues in Biology

A specialized treatment of some aspect of biology that is of current interest to the biologist as well as to society in general. *Prerequisites will be specified according to topic.* NCX*

198. Internship and Undergraduate Research

Students wishing to take either of the sections below should have a GPA of 3.0 or better in Biology, and must present an outline of their projected research to the Chairperson not later than the fifth week of the term preceding the start of the project. (2–5 units).

198.01. Internship

Students may work in off-campus laboratories under the direct guidance of cooperating research scientists and faculty advisers.

198.02. Undergraduate Laboratory Research

Supervised laboratory research culminating in a written report suitable for publication. Sustained for one year with credit given for one term. *Prerequisite: departmental and University permission.* NCX*

199. Directed Reading and Research

Detailed investigation of a specific topic in biology under the close direction of a faculty member. *Prerequisite: departmental and University permission.* Students wishing to take this course should have a GPA of 3.0 or better in Biology and must present an outline of their projected research to the departmental chairperson not later than the fifth week of the term preceding the start of the project, which will continue for one term only. NCX*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF CHEMISTRY

Professor Emeritus: Joseph F. Deck
Professor: William F. Sheehan
Associate Professors: Lawrence C. Nathan, Robert J. Pfeiffer, *Chair,* Lois C. Rosenthal, Michael A. Sweeney, David White
Assistant Professor: W. Atom Yee

The Department of Chemistry offers two baccalaureate degrees. One prepares a student for further work in chemistry, either in graduate school or as a professional chemist. The Bachelor of Science in Chemistry program is approved and certified by the American Chemical Society. The Bachelor of Science with a Major in Chemistry prepares a student for a career in medicine, dentistry, law, chemical engineering, business, teaching, or related fields. Each of these specialities requires different supporting courses. Suggested curricula have been prepared by the Department.

* Exempted from challenge

Requirements For Major

All students must complete the University and College requirements for the Bachelor of Science (page 24). In addition to these general requirements, the specific departmental programs for each degree are presented below.

Bachelor of Science in Chemistry (Certified)

This four-year curriculum provides graduates with the background necessary to begin a career in chemistry at various industrial and governmental laboratories or to transfer on graduation to institutions offering advanced degrees in chemistry or medicine. The American Chemical Society certifies that this degree meets all its recommended professional standards for chemists.

1. Mathematics 11, 12 and 13; Mathematics 21 recommended.
2. Physics 4, 5 and 6.
3. One computer course: Chemistry 20, Mathematics 10, or Engineering 3.
4. A reading knowledge of French or German. The student must pass an examination in the language of choice by the end of the junior year.
5. Chemistry 1, 3, 10, 35, 36, 37, 101, 110, 114, 151, 152, 153 and 180.
6. Two additional upper division biology, chemistry, physics, engineering or mathematics courses. At least one of them must be organic chemistry, chosen from Chemistry 134, 135, 136, 140, or others that may be offered.

Bachelor of Science with a Major in Chemistry

This four-year program provides a liberal scientific degree suitable for those planning a variety of careers associated with chemistry, including environmental or patent law, business, health-related sciences and others.

1. Mathematics 11, 12, and 13.
2. Physics 4, 5 and 6, or Physics 104 and 105.
3. One computer course: Chemistry 20, Mathematics 10, or Engineering 3.
4. Chemistry 1, 3, 10, 35, 36, 37, 110, 114, 151, 152.
5. Five additional upper division biology, physics, chemistry, engineering, or mathematics courses. At least two of these five courses must be chemistry. One of the two chemistry courses must be organic chemistry (chosen from 134, 135, 136, 140, or others that may be offered). One of these five science courses must have a laboratory, and each must be acceptable toward its own major.

Other Programs

Students of superior ability who enroll for either chemistry degree may apply for admission to the Honors Program. A special "waiver" program exists for those who wish to teach chemistry at the high school level. The Department Chair should be consulted at an early date. *Note:* Laboratory courses require payment for breakage and chemicals after each course is completed (see Student Expenses). Chemistry 135 and 136, 154 and 155 are offered every other year.

1. General Chemistry I

Atomic structure. Periodic properties and the periodic table. Nomenclature. Chemical bonding. Molecular structure. Chemical equations and stoichiometric relationships. Properties of gases, liquids, and solids. Equivalent weights. Oxidation and reduction. Chemical properties. Quantitative determinations in the laboratory exercises. Laboratory 3 hrs/wk. *Prerequisites: high school chemistry, physics, algebra, geometry, and trigonometry.*

2. General Chemistry II

Solutions. Chemical thermodynamics. Equilibrium. Acids and bases. Ionic equilibria. Electrochemistry. Properties and structures of metals, non-metals, and their compounds. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 1 or equivalent.*

3. General Chemistry (Honors)

Solutions. Electrochemistry. Thermodynamics. Chemical equilibrium. Ionic equilibria. Chemical kinetics. Acids and bases. Chemical properties. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 1 or equivalent.*

5. General Chemistry I for Engineers

Same as Chemistry 1. Laboratory. NCX*

6. General Chemistry II for Engineers

Same as Chemistry 2. Laboratory. *Prerequisite: Chemistry 1 or Chemistry 5 or equivalent.* NCX*

7. The Art of Chemistry

Atomic and molecular structure. Laws of chemical change. Kinetic theory. Periodic table. Chemical reactions. A brief treatise on the elements. For the nonscience student. NCX*

8. Chemistry and Society

Atomic structure. Acids and bases. Compounds of carbon. Food chemistry. Plastics. Biochemical reactions. The role of Chemistry in modern life. Laboratory 3 hrs/wk. For the nonscience student.

10. Quantitative Analysis

Introduction to the theories and practice of acid-base, oxidation-reduction, complexation, precipitation, potentiometric and spectrophotometric analyses. Laboratory 4 hrs/wk. *Prerequisite: Chemistry 2 or 3.*

20. Computer Applications in Chemistry

Introduction to programming in BASIC and/or FORTRAN. Chemical applications include unit conversions, stoichiometry, colligative properties, gas laws, equilibria, titration curves, thermodynamic and kinetic parameters, and numerical and statistical methods. *Prerequisites: Chemistry 10 and Chemistry 36.* NCX*

30. Survey of Organic Chemistry

A survey of the more important classes of organic compounds with emphasis on materials of interest to the students of the biological sciences. Laboratory 3 hrs/wk. Intended for students not majoring in chemistry and not planning to take additional courses in organic chemistry. *Prerequisite: Chemistry 1, 5, 7, or 8.*

35. Organic Chemistry I

Basic concepts of bonding and structure in organic compounds, stereochemistry. Physical and chemical properties of alkanes, cycloalkanes, and alkyl halides. Introduction to reaction mechanisms. Spectroscopic analysis of organic compounds. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 2 or 3.*

36. Organic Chemistry II

Preparation and properties of compounds containing one functional group. Continued study of reaction mechanisms. Molecular orbital treatment of resonance. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 35.*

37. Organic Chemistry III for Chemists

Chemistry of polyfunctional compounds. Introduction to heterocyclic compounds, proteins, carbohydrates and polynuclear aromatic compounds. Polymers. Orbital symmetry concepts. Rearrangements and neighboring group participation. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 36.*

50. Origin of Life on Earth

Formation of the earth; chemistry of its early atmosphere. Development of complex

* Exempted from challenge

molecules capable of reproduction. Emphasis on unsolved problems, controversies, and the human aspects of science. For the nonscientist.

101. Advanced Inorganic Chemistry

Aspects of atomic structure. Theories of chemical bonding and molecular geometry. Crystal structure. Applications of symmetry and group theory. Descriptive chemistry. Coordination chemistry. Introduction to organometallic chemistry. Laboratory 3 hrs/wk. *Prerequisites: Chemistry 10, 36, and 152.*

110. Instrumental Methods of Analysis

Principles and use of instruments. Ultraviolet, visible, infrared, Raman, nuclear magnetic resonance, and atomic absorption spectroscopy. Selected electroanalytical methods. Magnetic susceptibility. X-ray diffraction. Laboratory 4.5 hrs/wk. (average). *Prerequisites: Chemistry 10, 37, 152.* Chemistry 101 is recommended.

112. Advanced Quantitative Analysis

Advanced volumetric and gravimetric analysis, and aspects of instrumental analysis emphasizing quantitative analysis: Oxidation-reduction equilibria and electrochemical analysis by both instrumental and non-instrumental techniques. Complex ion titrations, instrumental and non-instrumental. Gravimetric analysis. Gas chromatography,theory and practice. Mass spectrometry, theory and workshop. Laboratory 4.5 hrs/wk. (average). *Prerequisites: Chemistry 10 and 152.*

114. Chemical Separations and Syntheses

Syntheses of selected compounds: advanced methods will include oxidation/reduction, electrophilic and nucleophilic substitutions, carbon-to-carbon and carbon-to-heteroatom multiple bond additions, important name reactions. Elemental analysis. Separation and characterization: distillation, chromatography (adsorption, including HPLC, thin-layer, exclusion), mass spectrometry, gas chromatography. These techniques will be applied to the synthesized compounds in the laboratory, together with appropriate chemical tests and spectrophotometric methods. Laboratory 7 hours/week. *Prerequisites: Chemistry 10 and 37.*

134. Advanced Organic Chemistry I

Synthesis and properties of five- and six-membered rings with one heterocyclic atom. Brief introduction to other classes. *Prerequisite: Chemistry 37.* NCX*

135. Advanced Organic Chemistry II (Physical Organic Chemistry)

Molecular orbital treatment of organic molecules. Mechanisms. Structure/reactivity relationships. Photochemistry. Conservation of orbital symmetry. Applications of absorption spectroscopy to organic compounds. *Prerequisites: Chemistry 37 and 152.* NCX*

136. Advanced Organic Chemistry III (Natural Products)

Synthesis, biosynthesis and structure determination of acetogenins, isoprenoids and alkaloids. Emphasis on reaction mechanisms and stereo-chemistry. *Prerequisite: Chemistry 37.* NCX*

140. Biochemistry

Nucleic acids, proteins, carbohydrates, lipids. Enzymes, bioenergetics, membrane structure. Intermediary metabolism, with emphasis on enzyme reaction mechanisms. *Prerequisite: Chemistry 37.* NCX*

150. Survey of Physical Chemistry

Principles of chemical thermodynamics with applications to biological systems. Laws of Thermodynamics. Electrochemistry. Biological oxidations. Thermodynamics of solutions. Transport properties of macromolecules. Survey of spectroscopy. Intended for students majoring in the biological sciences, this course does not count toward a major in Chemistry. *Prerequisites: Chemistry 10 and 35 and Mathematics 11.* NCX*

151. Physical Chemistry I

Principles and applications of chemical thermodynamics. Energy, enthalpy, entropy, free energy. Chemical equilibrium. Phase transitions. Real gases. Thermodynamics of solutions. Laboratory 6 hrs/wk. *Prerequi-*

* Exempted from challenge

sites: Chemistry 10, Mathematics 13, and Physics 105 or 6.

152. Physical Chemistry II

Electrochemistry. Kinetic theory of gases. Principles of chemical kinetics. Transport properties. Molecular spectroscopy. Laboratory 6 hrs/wk. *Prerequisite: Chemistry 151.*

153. Physical Chemistry III

Quantum mechanics. Particle in box. Harmonic oscillator. Hydrogen atom. Variation method. Virial theorem. Molecular structure and spectroscopy. Problems, small and gigantic. *Prerequisite: Chemistry 152.* Mathematics 21 is recommended. NCX*

154. Nuclear Chemistry and Radiochemistry

Nuclear chemistry: nuclear structure, radioactive decay, nuclear reactions. Radiochemistry: interaction of radiation with matter, counters, tracers in chemistry. *Prerequisites: Chemistry 152, or Physics 6 and 7, or Chemistry 150 plus consent of Instructor.* NCX*

155. Statistical Mechanics

Critique of the basis of statistical mechanics. Entropy postulate. Perfect monatomic and diatomic gases. Ortho and para molecules. Crystals. Third law and exceptions. Quantum statistics. High-order transitions. Numerical computation of thermodynamic functions. *Prerequisities: Chemistry 20 and 152.* NCX*

180. Undergraduate Research and Seminar

Individual research for senior chemistry majors under direction of faculty. Chemical and/or computer laboratory to be arranged. A written report suitable for publication and oral presentation of that report in seminar are required for credit. Regular attendance at seminars is required. *Prerequisites: Chemistry 152 and competence in a foreign language.*

190. Advanced Topics in Chemistry

Special topics of current interest in chemistry (e.g., polymers, elementary chemical engineering, social issues) that are not covered in detail in other courses. *Prerequisites will depend on the specific topic being presented.* Not necessarily offered every year. NCX*

199. Directed Research in Chemistry

Detailed investigation and directed reading on advanced topics, under the close supervision of a faculty member. Permission of the Dean, Department Chair, and Instructor must be obtained before registration any term. NCX*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF THE CLASSICS

Professor Emeritus: Walter J. Kropp, S.J.
Associate Professor: Helen E. Moritz, *Chair*
Assistant Professor: Barbara R. Pavlock
Lecturer: John R. Dunlap

Classics in the broad sense is the study of all aspects of the life and culture of ancient Greece and Rome. The Classics Department concentrates on the languages (ancient Greek and Latin) and literatures of those cultures and also offers courses in various aspects of ancient civilization.

A major in Classics prepares the student for graduate study in such fields as Classical literature, Classical archaeology, ancient history, and comparative literature. Teaching classics at the high school or college level requires certification or an advanced degree. Because of the multidisciplinary nature of the field, Classics provides a general liberal arts curriculum that is an excellent background for careers in many areas.

* Exempted from challenge

Every course in the department is open to any interested student with the necessary preparation. Classics courses, such as Mythology, Classical Epic, and Women in Antiquity, require no knowledge of Latin or Greek. Latin or Greek may be taken to satisfy the foreign language requirement. Nonmajors preparing for graduate study in certain areas of History, Philosophy, or English may wish to acquire a knowledge of Latin or Greek as a research tool in those fields.

Requirements For Major

Majors are available in any one of three programs in Classical Languages and Literatures — Latin, Greek, or Latin and Greek—and in a multidisciplinary program in Classical Studies. Because course offerings in any one term are limited, students wishing a Classics major are encouraged to plan their curriculum in consultation with a faculty adviser at the earliest possible date.

In addition to completing the major requirements specified below, Classics majors must fulfill University and Bachelor of Arts requirements (see page 23).

Classical Languages and Literatures

These programs emphasize the study of Latin and/or Greek and the literature surviving in those languages, and are supported by courses in other aspects of ancient literature and civilization.

Majors who plan to do graduate work in Classics should acquire at least a minimal familiarity with both ancient languages.

In addition to such lower division courses in Latin or Greek that the student may require, majors must complete the following courses.

Requirements

Latin or Greek

Nine upper division courses in the language of concentration

Latin and Greek

Nine upper division courses in Latin and Greek, with at least 6 of these in a single language

Students in these programs are strongly encouraged to fulfill the Western Culture requirement with English 11, 12, 13 (Literature of the Western World).

Recommended Electives

Lower Division: Classics 65 (Mythology); History 11 (Western Civilization I); Philosophy 11 (Ancient and Medieval Philosophy); Art 11 (Ancient and Medieval Art)

Upper Division: Courses in the Classics 180-series; History 117 (Ancient Greece); History 118 (Roman Republic)

Classical Studies

For the student interested in the bases of Western civilization, this program offers a broad curriculum in language, literature, history, philosophy, and art unified by a concentration on the Classical periods in ancient Greece and Rome. Courses in Latin or Greek language and in Classical literature (in the original or in translation) are its core, but the program emphasizes a comprehensive understanding of the foundations of Western culture rather than a single discipline.

Requirements

1. Minimum of *five* courses in Latin or Greek, which may include the Elementary sequence (this simultaneously fulfills the foreign language requirement for the Bachelor of Arts degree). Students entering with prior study of Latin or Greek may substitute courses from the Classics 180-series for up to two of these courses with *advance* approval of the Department Chair.
2. Additional Lower Division Requirements: Classics 65, (Mythology); English 11, 12, 13 (Literature of the Western World I, II, III); History 11, (Western Civilization I); Philosophy 11, (Ancient and Medieval Philosophy); Art 11, (Ancient and Medieval Art)
3. Additional Upper Division Requirements—6 courses, distributed as follows:
   a. Two courses in Classical literature: at least one from Classics 182, 183, 186; the other from these or from the Classics 120–170-series (upper division Greek and Latin literature)
   b. One course in Classical culture from Classics 184, 187; Political Science 111; Philosophy 114; Art 170
   c. One additional course in Classical literature or culture
   d. History 117 (Ancient Greece) and History 118 (Roman Republic).

Recommended Electives

Upper Division: English 143, 145, 146, 161, 162, 163; Art 174, Theatre Arts 134, 150

LATIN

11, 12. Elementary Latin I, II

Introduction to vocabulary, forms, and grammar of Classical Latin. Development of reading skills with supporting exercises in writing. No language laboratory.

13. Elementary Latin III

Completion of Latin grammar. Introduction to reading Latin literature.

101. Advanced Latin I

Rapid review of Latin grammar. Especially for students wishing to refresh their high school Latin.

102. Advanced Latin II

Reading in a variety of Latin prose and poetry. Recommended entry course for most students with four years of high school Latin. Together, Classics 101 and 102

complete the language requirement for the B.A. degree for students with two or three years of high school Latin.

121. Caesar

Representative selections from the *Commentarii* on the Gallic War and/or the *Bellum Civile.* Consideration of the adaptation of history to political ends.

122. Catullus

Lyric poems, short epigrams, and longer mythological poems by the late Republican poet of personal love and sophisticated society.

123. Roman Comedy

One or more plays by Plautus or Terence. Origins and nature of Roman comedy.

124. Ovid

Selections from the major works, which include love poems, *Amores;* a handbook for amatory success, *Ars Amatoria;* and the epic compendium of mythology, the *Metamorphoses.*

125. Cicero, Philosophical Works

Consideration of Cicero's eclectic philosophy through a careful reading of one or more of his philosophical dialogues, e.g., *De Amicitia, De Senectute,* or the *Dream of Scipio.*

126. Cicero, Oratory and Rhetoric

One or more exemplars of Cicero's rhetorical style (e.g., Catilinarian Orations, *Pro Archia*) or rhetorical theory (e.g., *De Oratore*). Consideration of rhetorical form, figures, and *topoi.*

127. Vergil, *Aeneid*

The epic poem on the effort of founding Rome and the cost of its greatness. Consideration of the traditional and innovative features of Vergil's epic style and purpose. Attention to epic metre.

131. Vergil, Eclogues and Georgics

Vergil's earlier works: pastoral poems set in an idealized landscape and the didactic poem on the agriculture and countryside of his native Italy.

132. Horace

Selections from the odes and epodes. Attention to the adaptation of Greek lyric forms and rhythms to the Latin language.

133. Livy

Selections from the *Ab Urbe Condita,* the history of Rome from its semimythical founding through monarchy, early Republic, and Punic Wars.

134. Roman Satire

Representative selections from among the works of Horace, Juvenal, and others. Origins and development of the satiric mode in Latin literature.

135. Medieval Latin

Major works of prose and poetry from the fourth century to the Renaissance, including St. Augustine's *Confessions;* the history of Gregory of Tours, Bede, and Einhard; Latin fables; popular songs such as the *Carmina Burana;* and the humanistic writings of Dante and Petrarch.

146. Latin Composition

Systemic practice in Latin prose syntax and idiom.

147, 148. Special Topics: Poetry; Special Topics: Prose

Occasional courses in selected authors or genres for advanced students. Possible topics: Lucretius or Elegy in Poetry; Cicero's letters, Tacitus or other Roman historians in Prose.

GREEK

21, 22. Elementary Greek I, II

Introduction to vocabulary, forms, and grammar of Attic Greek. Development of reading skills with supporting exercises in writing. No language laboratory.

23. Elementary Greek III

Completion of Greek grammar. Introduction to reading Greek literature.

111. Advanced Greek I

Rapid review of Greek grammar in the context of reading selected excerpts from Greek prose and poetry. *Prerequisite: 23 or equivalent.*

151. Lucian

Selections from the author's satirical treatments of mythology, history, philosophy, and rhetoric (*e.g., Dialogues of the Dead*) and/or from the fantasy called *A True Story.* Lucian's place in the Second Sophistic.

152. Homer, *Odyssey*

Selected passages demonstrating the fusion of the heroic and the romantic in an epic of peacetime. Consideration of epic metre and conventions.

153. Euripides

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to Euripides' place in the history of tragedy. Metrical reading of dialogue.

154. Herodotus

Selections from the *Persian Wars.* Herodotus' achievements and limitations as "Father of History". Peculiarities of the Ionic dialect.

155. Plato

Careful reading from one or more dialogues such as *Apology, Crito, Phaedo,* and *Republic.* Detailed study of dialogue mode of discourse; overview of Plato's philosophy.

161. Homer, *Iliad*

Selected passages illustrating the course and consequences of the Wrath of Achilles and the nature of the hero. Consideration of epic metre and conventions.

162, 163. Sophocles; Aeschylus

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to the author's particular contributions to the development of the tragic form. Metrical reading of the text.

164. Oratory

Selections from a representative Greek orator such as Demosthenes or Lysias. Consideration of Classical rhetorical forms and *topoi.*

165. Lyric Poetry

Fragments of Alcaeus, Archilochus, Sappho, Simonides, and others. Development of Elegiac, Iambic, and Melic forms.

176. Greek Composition

Systematic practice in the syntax and idiom of Attic prose.

177, 178. Special Topics; Poetry; Special Topics; Prose

Occasional courses in selected authors or genres for advanced students. Possible topics: Hesiod or Pindar in Poetry; Thucydides or New Testament readings in Prose.

NOTE: At least one course in Latin literature (numbers 120–149) and one course in Greek literature (numbers 150–179) is offered each academic quarter. These courses are cycled in order to ensure majors the opportunity of studying the greatest number of major authors and genres without duplication during their program. Courses numbered between 120 and 179 are ordinarily offered at least once in three or four years, but listing here does not guarantee that a given course will be offered in any given year.

CLASSICS

(No knowledge of Latin or Greek necessary.)

50. Technical Terminology

An introduction to technical vocabularies, especially in life sciences, through their roots and origins in Greek and Latin.

61. Survey of Classical Literature

Historically and culturally based survey of major Greek and Latin authors from Homer through St. Augustine, and introduction to the principal literary genres of antiquity,

epic, tragedy, comedy, philosophical dialogue, and satire. (Also listed as English 11.)

65. Classical Mythology

Principal gods and heroes of Greek and Roman antiquity, their stories, significance, and pictorial representations. Implications of myth in society and possible origins of myth. Important background for European and English literature. (Also listed as English 65.)

182. Classical Tragedy

Representative works of the principal Greek tragic playwrights, Aeschylus, Sophocles, and Euripides; features of the tragic genre, its origins, and the conventions of its performance. At the discretion of the instructor, the course may include satyr drama and the Roman tragedy of Seneca. Consult course description published in advance of the quarter offered. (Also listed as English and Theatre Arts 110.)

183. Classical Epic

The *Iliad* and *Odyssey, Argonautica* and *Aeneid* in translation. Characteristics and historical development of epic genre and epic hero. (In English department listing, called Hero in Antiquity.)

184. Women in Antiquity§

Greek and Roman women from prehistoric times through the Roman Empire, from domestic, legal, and cultural perspectives. Special attention to select women of note.

186. Classical Comedy

Representative works of Aristophanes, Menander, Plautus, and Terence illustrating the special features of Greek Old and New Comedy and Roman Comedy. Development of the comedic form in historical and literary contexts. Conventions of performance. Consideration of the nature of humor and comedy. (Also listed as English and Theatre Arts 186.)

187. Introduction to Classical Archaeology

Survey of the development of Classical archaeology from Schliemann to contemporary excavation. Investigation of major archaeological sites in Classical lands (e.g., Knossos, Mycenae, Athens, Vergina, Rome, Pompeii) and their significance for history and art. Archaeological problems and methods connected with these sites.

199. Directed Reading or Research

Individually designed programs of reading or research, in Latin, Greek, or Classics (i.e., literature in translation or culture). Available to the advanced student. Written permission of the Instructor, Department Chair, and Dean required in advance of registration.

§ Course included in Women's Studies Program

COLLEGE OF ARTS AND SCIENCES
COMBINED SCIENCES

The College of Arts and Sciences offers a program designed for those students who wish to incorporate the study of both the social and natural sciences. Completion of the program merits a Bachelor of Science degree in Combined Sciences.

Students who wish to take a Combined Science program must fulfill the general requirements of the College of Arts and Sciences for their particular areas of emphasis in the natural and social sciences. For details, the student should consult with the Coordinators of Combined Sciences: Dr. Joseph Deck, *Department of Chemistry* and Dr. John Drahmann, *Department of Physics.*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ECONOMICS

Professors: Mario L. Belotti, William F. Donnelly, S.J., John M. Heineke, Thaddeus J. Whalen, Jr.
Associate Professors: Henry G. Demmert, Alexander J. Field, Carl Mosk, Thomas Russell, Hersh Shefrin, *Chair*
Assistant Professors: Richard T. Coz, Alan Taylor
Acting Assistant Professor: Laurence R. Iannaccone

A social science primarily concerned with the production and distribution of society's material wealth, economics deals with production, pricing, and investment at the corporate and industry levels and with the problems of unemployment, inflation, income distribution, government spending and taxation, and economic efficiency at the national level. Economists are also concerned with international economic relations and with problems related to the economic growth of developing countries.

Because of its methodology and subject matter, economics provides an excellent background for the study of law. It is also acknowledged to provide the most useful and comprehensive academic preparation for entry into the MBA program.

The vast majority of graduates in economics enter careers in business, domestic and international banking, local, state, and federal governments, or private economic consulting. Many pursue graduate work in economics, law, business, and public policy.

Students majoring in Economics, in addition to fulfilling the general requirements for a Bachelor of Science degree (page 24), must complete the following departmental requirements.

Lower Division

1. Economics, 1, 2, and 3
2. Economics 55 (Decision Sciences 40 may be substituted)

3. Two math courses: Math 11 (Analytical Geometry and Calculus I); and Math 12 (Analytical Geometry and Calculus II)
4. One computer course (Decision Sciences 17 or Engineering 3 or equivalent)

Upper Division:

1. Economics 114, 115, 116, and 173 or 174
2. One course to be chosen from Economics 122, 128, or 180
3. One course to be chosen from Economics 120, 121, or 124
4. Three upper division economics electives (Students may petition to substitute one of the upper division economics electives with another course, with prior approval of the Department Chair.)

Special Programs

Emphasis in Mathematical Economics

The Departments of Mathematics and Economics jointly offer a program providing an emphasis in mathematical economics. Students wishing to participate will major in either mathematics or economics but will follow a special course of study to emphasize the use of mathematics in the study of economics; participation in this course of study will be noted on the student's transcript. This program will be especially valuable for students planning graduate work or careers in actuarial science, economics, mathematics, operations research, systems engineering, and related fields. The core of the program consists of Economics 114, 115, 170, 171, and 177; Mathematics 21, 22, 52, 53, 102; and either Economics 174 or Mathematics 122, 123. Full descriptions of the program may be obtained from the Chairs of the Department of Economics or Mathematics.

Emphasis in Political Economy

The Department of Economics and Political Science jointly offer a program providing an emphasis in Political Economy. Students wishing to participate will major in either economics or political science but will pursue a special course of study that emphasizes the interdependence of economics and political science in the analysis and solution of current domestic and world economic problems. Participation in this program will be noted in the student's transcript. This program will be especially valuable to students planning graduate work or careers in public affairs, law, economics, and political science. The core of the program consists of Economics 114, 115, 116, 120 and 173 or 174; Political Science 150, 151, 165 and 167. Full descriptions of the program may be obtained from the Chairs of the Departments of Economics or Political Science.

Lower Division Courses

1. Principles of Economics I

An introduction to the general principles, terminology, and methods of macroeconomics.

2. Principles of Economics II

An introduction to the general principles, terminology, and methods of microeconomics.

3. Principles of Economics III

A study of contemporary economic issues and problems. This course will use the methodology and tools learned in Economics 1 and 2 to investigate in detail some of the major economic issues of the day. *Prerequisite: Economics 1 and 2 or permission of the instructor.*

12. American Economic History

A study of the economic history of the United States with special emphasis on basic economic organizations, such as the business enterprise, the labor union, and the economic functions of government.

55. Statistics

Introduction to statistical methods and techniques for both discrete and continuous random variables.

Upper Division Courses

(Economics 1 and 2, or permission of the Undergraduate Committee, is required for all upper division courses.)

114. Microeconomics I

An introduction to the theory of demand, production, cost, and pricing.

115. Aggregate Economic Theory

The focus of this course is on the macro, or aggregate aspects of the economy. It emphasizes modern macroeconomic models that aim at explaining the level of output, employment, and prices.

116. History of Economic Thought

A study of the evolution of economic ideas and their influences on the development of economic practices. *Prerequisites: Economics 114 and 115.*

117. European Economic History

A study of the preindustrial environment and industrial growth patterns of the western European countries.

118. Comparative Economic Systems

In this course the performance of market economics is contrasted to that of centrally planned, non-market economies and to that of "mixed" economics. The question of performance is addressed from both a theoretical and a practical point of view.

120. Economics of the Public Sector

A microeconomic analysis of the role of government in the market economy. Topics include the supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process. *Prerequisite: Economics 114.*

121. Microeconomics II

The purpose of this course is to acquaint the student with applications of microeconomic theory to familiar economic problems.

122. Money and Banking

A theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy.

124. Industrial Organization

A microanalysis of the structure, conduct, and performance of American industry. *Prerequisite: Economics 114.*

125. Welfare Economics

A study of the principles by which economists evaluate the social desirability of al-

ternative market arrangements. *Prerequisite: Economics 114.*

126. Economics and the Law

An application of the tools of economic theory to the analysis of law and legal institutions as they exist in the contemporary United States. Topics include a theory of property rights, the economics of the common law, income distribution and theories of economic justice, the economics of crime and punishment, antitrust law and regulatory law. *Prerequisite: Economics 114 or permission of the instructor.*

128. Business Cycles and Forecasting

A study of the nature and causes of economic instability in an industrial economy.

129. Economic Development

An analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries.

130. Latin America Economic Development

An examination of the economic development of Latin American countries with particular emphasis on the relationships between economic growth and the social, political and economic structures of these countries.

131. African Economic Development

A study of the economic development of Africa, with particular emphasis on the relationships between economic growth and the social, political, and economic structures of countries.

132. Asian Economic Development

A study of the economic development of Asian countries with particular emphasis on the relationships between economic growth and the social, political and economic structures of these countries.

134. Growth Dynamics and Planning

A study of various theoretical growth models and their application to development, planning, and project evaluation. *Prerequisites: Economics 114 and 115.*

135. Economic Development of Japan

An analysis of the historical development of Modern Japanese economy from the Meiji era to the present with an emphasis on the relationship between government, business, and labor.

140. Urban Economics

This course examines the economics of urban problems with emphasis on location and land use, the housing market, and transportation. The interaction of location and land-use decisions with the housing market and the transportation system is analyzed with reference to the amelioration of urban problems. *Prerequisite: Economics 114 or permission of the instructor.*

142. Economics of Natural Resources

This course will explore the supply of and demand for energy from national and international perspectives. The relationship between energy use, economic growth, and the environment will be investigated.

150. Labor Economics

A study of labor productivity, incomes, employment and how these are affected by labor organizations and labor legislation.

161. The Economics of Poverty

A study of the economic conditions that lead to poverty and possible alternative policies directed at modifying such conditions.

170. Mathematical Economics I

In this course many familiar micro- and macroeconomic models are generalized and reformulated as mathematical systems. Attention is focused on exploring the properties of these models using mathematical techniques. Emphasis is primarily on static models. *Prerequisites: Mathematics 11 and 12, Economics 114 and 115, or consent of instructor.*

171. Mathematical Economics II

Analysis of dynamic economic models. Differential and difference equations are used to explore economic growth, technological change and other types in both macro- and microeconomics. Selected topics from the economics of uncertainty are also discussed. *Prerequisites: Mathematics 11 and 12, Economics 114 and 115, or consent of instructor.*

173. Econometrics I

A course that provides the student with methods to analyze economic data. Topics such as time series data, index numbers, hypothesis testing, and simple regression will be covered. *Prerequisite: Economics 55.*

174. Statistical Analysis

A course designed to acquaint the student with the foundations of statistical research methods. Topics include distribution theory, estimation, testing and prediction, with special emphasis on multivariate models. *Prerequisites: Mathematics 11 and 12 or equivalent.*

177. Econometrics II

An introduction to the techniques used by economists to estimate and test economic relationships. Focus is on regression analysis, time series problems, and estimation of multiple equation models. *Prerequisite: Economics 174 or equivalent.*

180. International Economics

An analysis of the theory of international trade, problems in balance of payments adjustments, and international economic policies. *Prerequisite: Economics 114.*

188. Economics Seminar

Modern economic theories and problems. Student admission by invitation only.

198. Independent Study

199. Internship

Opportunity for selected upper division students to work in local governmental units or firms. *Prerequisite: Upper division standing and approval of the Undergraduate Committee.*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ENGLISH

Professors: James P. Degnan, Francis X. Duggan, William J. Rewak, S.J.
Associate Professors: Diane E. Dreher, Mary Judith Dunbar, Christiaan Lievestro, Elizabeth J. Moran, Charles T. Phipps, S.J., *Chair*
Assistant Professors: Edward D. Gross, Carolyn A. Mitchell, Richard H. Osberg, Theodore Rynes, S.J., Joseph L. Subbiondo, Frederick Tollini, S.J., Fred D. White, Jeffrey L. Zorn
Lecturers: Mary Ann Aschauer, Simone J. Billings, Phyllis Brown, John R. Dunlap, Susan Frisbie, Edward Kleinschmidt, Claudia Mon Pere, Carol Rossi, Cory Wade
Lecturer and Scholar-in-Residence: James S. Torrens, S.J.

The Department of English provides students with a thorough undergraduate education in the liberal arts centered on the history, theory, and aesthetics of literature and the art of writing. The knowledge and skills developed in English courses are an excellent preparation for careers in law, government, business, communications, and education, as well as for graduate study in literature or writing.

Requirements For Major

In addition to University requirements and requirements for the Bachelor of Arts degree (page 23), English majors must complete five lower division English

courses (not counting the three composition courses required by the College) and eight upper division English courses. English majors ordinarily fulfill their composition requirements by taking English 9 and 10 and English 22 or 23.

The Department of English offers its majors two programs: a Language and Literature Program, which provides students with a number of options, and a Single-Subject Credential Program for students interested in teaching English in California secondary schools.

Language and Literature Program

This program is especially suitable for students planning to enter law school or an MBA program and to do further study in journalism, language, or linguistics. It is also designed to meet requirements for graduate studies in literature, writing, or education. The heart of the program is a three-course sequence in closely related topics.

Lower Division Requirements

Except as noted below, lower division course requirements include the following five courses.

1. English 11 (Literature of the Western World I)
2. English 21 (Introduction to Literature: Poetry)
3. English 41, 42, and 43 (Survey of English Literature I, II, and III)

The Literature of the Western World sequence (11,12,13), which is one of the Western Culture sequences required by the University curriculum, does not satisfy this requirement for English majors, who must follow a Western Culture sequence in the Art, History, or Philosophy departments.

Upper Division Requirements

Students must distribute their eight required upper division courses as follows.

1. Three courses from one of these groups:
   a. Medieval Literature 103, 141, 142
   b. Renaissance Literature 113, 116–118, 143–145
   c. Post-Renaissance Literature 114, 146–152, 155
   d. American Literature 119, 131–139 (see description following)
   e. Comparative Literature 110–112, 141, 155, 161–167, 184.02, 186.01, or three courses in one foreign literature
   f. Fiction 134, 151, 152, 167
   g. Dramatic Literature 100–119, 186
   h. Language and Linguistics 101–104
   i. Writing 170–181, 198.2 (see description following)
2. One course in Shakespeare 116–118). If a Shakespeare course from Groups *b* or *g* has already been included, a course in Chaucer (142) or Milton (145) must be substituted to fulfill this requirement.

3. Three upper division elective courses, at least one of which must be an English period course (141, 143, 145, 146, 147, 148, 149), if not already included from one of the above groups
4. One Senior Seminar

Recommended Electives

English 103, 104, 116, 117, 118, 123, 142, 145

American Literature Emphasis

Students with a special interest in their American heritage may choose a further special concentration in American literature. Their lower division requirements are the same as above except that they may substitute up to three courses from the sequence 31, 32, 33 for courses in the sequence 41, 42, 43, and for 22 or 23. Upper division requirements are the same except that one of the three electives must be in American literature and the other two must be in British literature, at least one of which must be a period course.

Writing Emphasis

Students who look to writing as an important part of their future careers may choose a further concentration in writing. Their lower division requirements are the same as above except that they may substitute one course from group 71–76 for English 43 and another from the same group for 22 or 23. Upper division requirements remain the same except that students may substitute a fourth writing course from 170–181 or 198.2 for the Senior Seminar.

Single-Subject Credential or "Waiver" Program

The state of California requires that students seeking a credential to teach English in California secondary schools, besides completing a fifth year of studies and student teaching, either pass a state examination in English or complete a state-approved program of studies in the subject. The program at Santa Clara is a state-approved program; the examination is waived for students who complete it. The general requirements of the state "waiver" program are that 10 percent of the course work be in oral communication, 20 percent in language studies (e.g., linguistics, grammar, or the history of the English language), 30 percent in written composition, and 40 percent in literature. The waiver program in any particular institution may require specific courses or studies within these four categories (e.g., Shakespeare or American literature within the category of literature). The requirements of the state of California "waiver" program in English are expressed in University of Santa Clara courses as follows: two courses in language studies, two in American literature, one in Shakespeare, one in ethnic literature, one in composition, and one in speech.

The department's program combines these state requirements with the ordinary requirements of the English Department major program (five lower division and eight upper division courses). Unless the program specifies courses that the student must take in fulfilling state requirements, any of the state requirements may be fulfilled in either lower division or upper division courses

provided both lower and upper division courses are offered in a subject. Some courses in the English department curriculum will fulfill two "waiver" requirements simultaneously (e.g., English 35, Afro-American Literature, and English 32 and 33 in the Survey of American Literature sequence, when each includes selections from Native American and black writers, simultaneously fulfill requirements in ethnic and in American literature).

Some requirements for the "waiver" credential in English may be fulfilled in courses in other departments (e.g., in courses in Chicano literature in the Modern Languages Department). The important thing is that the student complete two sets of overlapping requirements—one of specific subjects required for the state of California "waiver" credential, the other of courses (or units) required of an English major in the University.

Lower Division Requirements

1. In addition to the writing course requirements for the Bachelor of Arts degree (ordinarily, for English majors, 9, 10, and 22 or 23), five courses distributed as follows: 11, 21, and three courses from 22 or 23, 31–33, and 41–43
2. English 35 or 66, if the student has not taken an ethnic literature course in another department

Upper Division Requirements

1. Two courses in language and linguistics from 101, 102, 103
2. One course in composition (ordinarily, 180)
3. Five other courses, which must include
   a. two in American literature from 119, 131–139, unless the student has taken two lower division American literature courses
   b. one in Shakespeare, unless the student has taken 54
   c. recommended: 104
4. Courses in other departments
   a. one in speech: Theatre Arts 1, 4, or 11
   b. one in ethnic literature, if the student has not taken English 33 or 66

Honors Program

Students majoring in English may participate in the University Honors Program. The Department of English offers special courses or sections of courses restricted to Honors students. It also permits Honors students majoring in English to begin taking courses in their sophomore year ordinarily restricted to juniors and seniors.

NOTE: Authors and topics listed in the following course descriptions are typical rather than definitive. Not all of them are necessarily included in a respective course every time it is offered, and others not listed here may be included. Some courses are offered every year; all, ordinarily, are offered at least once every two years.

1. Composition and Rhetoric I

Expository writing for college students. NCX*

2. Composition and Rhetoric II

Argumentation and research writing. *Prerequisite: English 1 or its equivalent.* NCX*

3. Composition and Literature

Continued instruction and practice in writing expository prose, which combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: English 1 and 2.* NCX*

4, 5. Guided Writing I, II

Courses in composition for students with special linguistic needs that have become evident after they have completed English 1. Both courses must be taken to substitute for English 2. NCX*

6, 7, 8. Writing for International Students

The course begins with reading and aural comprehension and progresses through written composition. English 7 and 8 substitute for English 1 and 2. NCX*

9, 10. Critical Composition I, II

Composition in literary topics for freshman English majors and for freshmen in the University Honors Program. Substitutes for English 1 and 2. NCX*

11, 12, 13. Literature of the Western World, I, II, III

An historical survey of Western literature from the ancient Greeks to the twentieth century. These courses satisfy the Core Curriculum humanities requirement for students who are not English majors.

21. Introduction to Literature: Poetry

An introduction to the study of poetry through critical reading and analysis.

22. Introduction to Literature: Drama

An introduction to the study of drama through critical reading and writing.

23. Introduction to Literature: Fiction

An introduction to the study of the novel and the short story through critical reading and writing.

27. Contemporary Novel

Readings in selected novels of the last decade.

31, 32, 33. Survey of American Literature I, II, III

An historical study of American literature from colonial times to the present.

35. Afro-American Literature†

Readings in the Black literature of America.

41, 42, 43. Survey of English Literature I, II, III

Readings in the history of English literature from the beginnings to the present. Emphasis on the history of ideas and on the major authors.

54. Shakespeare

Readings in selected major plays.

65. Mythology

A study of classical mythology, with consideration of literary, psychological, and anthropological implications.

66. African Literature†

Readings in the contemporary literature of Black sub-Saharan Africa.

67. Modern Novel

Readings in selected twentieth-century novels.

68, 69. Women's Literature I, II§

Introductions to the study of literature by and about women.

71. Introduction to Fiction Writing

An introduction to the writing of fiction. *Prerequisites: English 1 and 2.* NCX*

72. Introduction to Poetry Writing.

An introduction to the writing of poetry. *Prerequisites: English 1 and 2.* NCX*

* Exempted from challenge § Course included in Women's Studies Program
† Course included in Ethnics Studies Program

74, 75. Journalism I, II

Introduction to news writing, with emphasis on newspaper reporting, feature and editorial writing. *Prerequisites: English 1 and 2. English 74 is the ordinary prerequisite for English 75.* NCX*

76. Exposition

A writing course that aims to develop the expository writing skills of students who have satisfactorily completed their freshman composition requirements. *Prerequisites: English 1 and 2.* NCX*

81, 82. Literary Topics I, II

Studies of special topics in literature.

95. Practical Journalism

A one-unit course for editors and principal writers on The Santa Clara. Students meet weekly with a faculty review committee to discuss ways of improving the quality of student reporting and writing. Students are graded P/NP only. NCX*

101. Linguistics

General survey of the science of linguistics: phonology, morphology, syntax, grammar, and usage.

102. Modern Grammar

Analysis of the basic problems of describing grammatical structure; traditional, structural, and transformational-generative grammars. *Prerequisite: English 101 or permission of instructor.*

103. History of the English Language

The origin, structure, and development of the English language. Special attention to the morphology and syntax of Old English.

104. Teaching English as a Second Language (TESL)

Introduction to theories of instruction; survey of methods and materials used in the teaching of English to speakers of other languages. *Prerequisite: English 101.* NCX*

110. Classical Drama

Greek and Roman plays in translation. Aeschylus, Sophocles, Euripides, Aristophanes, Seneca.

111. Continental Drama

See Theatre Arts 111.

112. Modern Drama

See Theatre Arts 112.

113. English Drama I

Non-Shakespearean drama in England to 1660. Medieval drama, Marlowe, Ford, Webster, Jonson.

114. English Drama II

Drama in England since the Restoration. Dryden, Wycherley, Congreve, Sheridan, Shaw, Eliot, and selected contemporary playwrights.

116. Shakespeare's Tragedies

117. Shakespeare's Comedies

118. Shakespeare's Histories and Sonnets

119. American Drama

See Theatre Arts 119.

123. Theory of Literature

Study of literary theory from Aristotle to the present.

131, 132, 133. Studies in American Literature I, II, III

Studies of selected authors, movements, or problems in American literature. Since authors and topics change from year to year, courses may be repeated for credit with permission of the Department Chair.

134. American Novel

Historical study of the American novel. Cooper, Hawthorne, Melville, Twain, James, Dreiser, Faulkner.

136. American Poetry I

Historical study of American poetry of the eighteenth, nineteenth, and early twentieth centuries. Taylor, Poe, Emerson, Longfellow, Whitman, Dickinson, Robinson, Frost.

* Exempted from challenge

137. American Poetry II

Study of American poetry of the twentieth century. Pound, Eliot, Williams, Stevens, Lowell, and more recent poets.

139. California Literature

Literature written by Californians and/or about California.

141. Medieval Literature

A study of English literature from its beginnings to 1485. Beowulf, medieval drama, Sir Gawain, Langland, Chaucer, Malory.

142. Chaucer

143. Renaissance Literature

Nondramatic literature of England from 1485 to 1603. Sidney, Spenser, Marlowe, Shakespeare, and others.

144. Seventeenth Century

Nondramatic literature of England from 1603 to 1660. Jonson, Donne, Herrick, Milton, Marvell, Herbert, Browne.

145. Milton

146. Neo-Classical Literature

Literature of England from 1660 to 1798. Dryden, Pope, Swift, Johnson, Boswell.

147. Romantic Movement

Nondramatic literature of England from 1798 to 1832. Blake, Burns, Wordsworth, Coleridge, Byron, Shelley, Keats.

148. Victorian Literature

The poetry and nonfictional prose of England from 1832 to 1900. Macaulay, Carlyle, Tennyson, Browning, Newman, Ruskin, Arnold, Hopkins.

149. Modern British Literature

The nondramatic literature of England in the twentieth century. Hardy, Conrad, Lawrence, Eliot, Auden, Graves, Forster, Woolf, Joyce.

150. Contemporary Literature

British and American poetry, fiction, and drama since World War II.

151. English Novel I

The English Novel in the eighteenth century. Defoe, Richardson, Smollett, Sterne, Fielding, Austen.

152. English Novel II

The English novel in the nineteenth century. Scott, the Brontes, Dickens, Thackeray, Eliot, Meredith, Butler, Hardy.

155. Irish Renaissance

Irish literature in English of the late nineteenth and early twentieth centuries. Yeats, Synge, Russell, Lady Gregory, Colum, O'Casey, Stephens, Joyce, O'Connor, O'Faolain.

161, 162, 163. Comparative Literature I, II, III

Studies in the forms, themes, and styles of continental European literature and their influence on English literature.

165. The Bible as Literature

A study of the genres, styles, and themes of the Bible.

166. Pan-African Literature†

Readings in the literature of the Black diaspora, including writers from Africa, the Caribbean, and the United States. Themes include slavery, negritude, and Pan-Africanism.

167. Modern Fiction

Selected works of continental, English, and American fiction that are peculiarly modern in sensibility or style. James, Proust, Joyce, Gide, Kafka, Mann, Woolf, Lowry, Faulkner.

168, 169. Women's Literature I, II§

Studies in literature by and about women. Authors, genres, and themes change from year to year.

170. Playwriting

See Theatre Arts 170. NCX*

171. Fiction Writing

A workshop in the writing of fiction. *Prerequisite: English 71 or persmission of the instructor.* NCX*

* Exempted from challenge § Course included in Women's Studies Program
† Course included in Ethnics Studies Program

172. Poetry Writing

A workshop in the writing of poetry. *Prerequisite: English 72 or permission of the instructor.* NCX*

174. Literary Journalism

Writing for magazines and periodicals, the book review, the satire, the explication, and the critical essay. *Ordinary prerequisites are English 76 or 74 and 75, or permission of the instructor.* NCX*

175. Magazine Writing

Writing articles for magazines and periodicals, with emphasis on controversial political, cultural, and scientific topics. *Ordinary prerequisites: English 76 or 74 and 75, or permission of the instructor.* NCX*

176. Intermediate Composition

A course for students of any major who have completed English 1 and 2 and who in their junior or senior years wish to strengthen the basic skills necessary for effective communication in their major fields. This course ordinarily does not satisfy an English major course requirement. NCX*

177. Advanced Composition

Intensive work in revision, organization, and stylistic development. *English 76 is a recommended prerequisite.* NCX*

178. Argumentation

A course in argumentative and persuasive writing for the general student, but particularly for students planning careers in business, politics, or law. *Prerequisites: English 1 and 2.* NCX*

179. Report Writing

An introduction to formal technical communication designed especially for students planning careers in business, the sciences, or engineering. *Prerequisites: English 1 and 2.* NCX*

180. Writing for Teachers

A course in writing and in the teaching of writing. Especially recommended for students planning careers in primary and secondary education. *Prerequisites: English 1 and 2.* NCX*

181. Writer's Workshop

Tutorial for superior writers from all disciplines, including sciences, business, and engineering. Enrollment by permission of the instructor. May be repeated once for credit. Flexible scheduling. NCX*

183, 184, 185. Special Topics I, II, III

Courses in major authors, genres, literary movements, or themes.

184.02 Women in Antiquity§

See Classics 184.

186. Special Topics in Drama

See Theatre Arts 186.

186.01 Classical Comedy

See Classics 186.

187. Special Topics in Literary Criticism

188. Senior Seminar

A seminar in English or American literature for senior English majors. NCX*

189. Honors Seminar

A seminar for students in the University Honors Program and other invited students. Since topics change from year to year, this course may be repeated for credit with permission of the Department Chair. NCX*

195. Practical Journalism

A one-unit course for editors and principal writers on *The Santa Clara.* Students meet weekly with a faculty review committee to discuss ways of improving the quality of student reporting and writing. Students are graded P/NP only. NCX*

198.10. Practicum in Writing

A work/study program for students of superior writing ability who gain course credit by supervised writing on newspapers, magazines, or for government or private agencies. Enrollment is by permission or invitation of the director. May be repeated once for credit. Students are graded P/NP only. NCX*

* Exempted from challenge § Course included in Women's Studies Program

198.20. Practicum in Tutoring Composition

A course for students of any major who wish to strengthen their writing skills by assisting freshman writers. Prospective students should consult the director. NCR*

199. Directed Reading/Directed Research

In special circumstances and with the permission of the Department Chair and the Dean of the College, a student may request of an instructor a course in directed reading or writing. Independent study may not be taken in a subject listed in this bulletin. NCX*

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF HISTORY

Professors: Norman F. Martin, S.J., Matt S. Meier
Associate Professors: Steven M. Gelber, George F. Giacomini, Jr., Mary McDougall Gordon, Gerald McKevitt, S.J., *Chair,* Istvan I. Mocsy, Timothy J. O'Keefe, Gary Okihiro, Peter O. Pierson, David E. Skinner, Thomas Turley
Assistant Professors: Ramon Chacon, Barbara Molony, Robert M. Senkewicz, S.J.
Lecturer: William Greenwalt
Patrick A. Donohoe, S.J., Professor: Matt S. Meier

History provides an understanding of all aspects of the human past. By synthesizing the humanities and social sciences, the study of history develops the ability to research, analyze, and communicate the reasons nations and peoples have evolved in particular ways. Knowledge and skills developed in history are excellent preparation for graduate study and careers in education, communications, government, law and business.

Requirements For Major

In addition to the general requirements for the University and the Bachelor of Arts degree (page 23), majors must pass twelve history courses.

The following requirements must be met by the twelve history courses.

1. Four lower division courses
2. Eight upper division courses
3. Historical Methods (History 100) — may be the *fourth* lower division or *ninth* upper division course. Recommended at end of sophomore or beginning of junior year
4. One seminar (History 198) with History 100 as a prerequisite
5. Three courses each in
   a. United States history
   b. European history
   c. Non-Western/Latin American history. (This requirement is not waived for those in a special emphasis program.)

* Exempted from challenge

Special Programs

Students who want to concentrate on a particular area of history may pursue a special emphasis program. Enrollment in one of these programs is not required. History courses taken to fulfill area program requirements also fulfill history requirements. Further information is available from the department.

United States History Emphasis

Requirements

1. Three United States area courses selected from English, Fine Arts, Music, Religious Studies, Economics, Political Science, and Anthropology.
2. History 97.77, or 198.20 and at least five other United States history courses

Recommended: Spanish or French language competency

European History Emphasis

Requirements

1. Three European area courses from Classics, Political Science, Fine Arts, Philosophy, Religious Studies, French, German, Italian, Spanish, or English.
2. History 91.77, 92.77 or 198.30 or 198.40 and at least five other History courses in the area of Ancient, Medieval, or Modern Europe

African History Emphasis

Requirements

1. Two African area courses selected from English 66 (African Literature), Anthropology 147 (African Prehistory), Anthropology 187 (Peoples and Cultures of Africa), and Economics 131 (African Economic Development)
2. History 198.60 (Seminar in African History) and at least five other African history courses

Recommended: French language competency

Asian History Emphasis

Requirements

1. Three Asian area courses selected from Economics 132 (Asian Economic Development), Political Science 2 (Introduction to Comparative Politics), 135 (Far East International Relations), 147 (Politics in Japan), 148 (Politics in China); Religious Studies 48 (Zen Buddhism) or 17 (Eastern Religions) *Note that Political Science 2 is a prerequisite for the upper division political science courses*

2. History 198.70 and at least five other Asian history courses, three of which must be upper division

Recommended: Japanese language competency

Latin American History Emphasis

Requirements

1. Three Latin American area courses selected from Political Science 136 and 137; Spanish 130, 131, 135, 140, 145, 146, 115 and 117; Economics 130; Anthropology 185. 2) History 198.80 and five other Latin American history courses

Recommended: Spanish language competency

Honors Program

History majors having at least a 3.5 grade point average in history (and not less than a 3.3 overall grade point average) at the end of the second quarter of the junior year may be invited by the department to become history honors students. History honors students will write a senior honors thesis under the direction of a professor. The thesis will be worth ten upper division history units, but history honors students must also take a ninth upper division course. Theses will be reviewed by a committee of three professors and if found to be of honors quality, the student will be granted a bachelor's degree with honors in history.

United States History

7. United States: Colonies and Constitution

An introductory survey of American history from first European settlement through the Constitutional Convention. Includes political, economic, social and intellectual aspects of America's first 200 years.

8. United States: The Nineteenth Century

An introductory survey of American history from the Constitutional Convention to the Spanish American War. Includes political, economic, social, and intellectual aspects of the century that saw the nation evolve from an infant state to an industrial world power.

9. United States: The Twentieth Century

An introductory survey of American history from the Spanish American War to the present. Includes political, economic, social, and intellectual aspects of America in an era of international involvement and domestic change.

76. American Capitalism

An analysis of the philosophy and social impact of the capitalist idea as it developed in America from the colonial period to the twentieth century. Explores the role of the businessman, social mobility, and some anticapitalist ideas.

81. Mexican Americans†

A broad history of the Mexican American in California and the Southwest. Special

† Course included in Ethnics Studies Program

emphasis on the period since 1848 and on Texas, New Mexico, and California.

83. Asian Americans†

Historical survey of Asians in America from immigration to c.1965; emphasis on Chinese, Japanese, and Filipino settlements along the West Coast. Topics include comparative immigration and settlement patterns, labor, community organization, and the anti-Asian movement.

84. Women in American Society§

An historical survey from the Puritan era to the present. The course emphasizes class, race, and ethnic origins and examines the changing cultural images and experiences of American women.

87. The American West

The West as a factor in American history, from the seventeenth century to the present, with emphasis on the nineteenth century trans-Mississippi frontier.

97.77. Honors Seminar, United States

Selected problems in United States history. The methods of the historian. Restricted to Honors Program students.

100. Historical Methods

Required of all majors in last quarter sophomore or first quarter junior year. Historical methods include research, writing, and historiography.

170. The American Colonies

The development of religious, political, economic, and social institutions in England's North American colonies in the seventeenth and eighteenth centuries.

171. Revolution, Confederation, Constitution

An intensive study of the origins, progress, and culmination of the American Revolution.

172. The Young Republic

A detailed examination into the establishment of an American political, social, cultural, and economic identity from Washington through Madison.

173. The Jackson Era

A study of the social and political reforms, the expansion and changes, the sectional and national politics of the United States during the period between 1815 and 1850.

174. The Old South

An intensive study of the Old South from the Revolution to the Civil War and Reconstruction, emphasizing both regional identity and the relationship of Southern history to the national experience.

175. The Gilded Age

An examination of the economics, culture, and society of America between the Civil War and World War I.

178. Twentieth-Century U.S. Diplomatic History

Critical study of the international relations of the United States, and of the economic, political, social, and public opinion forces influencing the development of American policy.

180. American Indians†

A history of Native Americans from European contact to the present, with an emphasis on nineteenth-century developments.

183. Social Movements in Twentieth-Century America

Popular movements for change, and against it. An investigation of the response of the American people to the problems of modern industrial society. Labor, women's rights, Black activism, anti-radicalism, Ku Klux Klan, peace movement, and others.

189. California

The history of California from the Indian period to the present, with major attention given to its 19th century development.

191. United States, 1957–1973: Era of Unrest

Little Rock to Watergate: social, political, and foreign policy upheavals of the 1960s. Civil rights movement, student and anti-war movements, hippies and others, Kennedy and Johnson, end of the Cold War and the war in Vietnam, Nixon and Watergate.

† Course included in Ethnics Studies Program § Course included in Women's Studies Program

193. Life and Work in the American City

Development of urban centers in the United States and their effect on the lives of ordinary people.

197.20. Special Topics in United States History

Occasional lecture courses in special topics in United States History.

198.20. Seminar in United States History

Historical seminars emphasizing original research and group discussions of selected problems and periods. *Prerequisite: History 100.*

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in United States history. Only with permission of Dean, Department Chair, and Instructor.

EUROPEAN HISTORY

11, 12, 13. Western Civilization

An interdisciplinary survey of Western culture and civilization from its beginning to the present, emphasizing the institutions and historical patterns which have shaped modern civilization. This course sequence may be taken by all non-history majors to fulfill the requirements of the Western Culture sequence. It is open to all students.

91.77, 92.77. Honors Seminar, Europe

Selected problems in ancient, medieval, and modern European history. The methods of the historian. Restricted to Honors Program students.

102. Women in Europe§

A survey of the social relationship between the sexes, including the daily lives of women in pre-industrial and industrial society, attitudes toward women in Western thought, feminism, and nineteenth-century women's movements.

105. War and Western Society to 1815

A study of war in Western civilization from Greek and Roman antiquity to the age of the French Revolution and Napoleon, the course deals with the complex relationships among war, politics, values, social structures, economics and geography. Battles and great commanders receive due attention, as does the place of war in thought, literature, and art.

106. War in the Modern World

A study of war from the era of the French Revolution to the post-World War II period, the course focuses on the complex problems and conflicts of expansive nation-states in an age of unprecedented economic growth and technological innovation. Grand strategy, high command and military and naval campaigns will receive close attention, as will the shifting attitudes of the modern mind facing the phenomenon of war.

110. European Culture and Society

A brief introduction to European culture and civilization from the end of the Middle Ages to the beginning of the twentieth century. Chief emphasis will be on the relationships of cultural forms, in the sense of letters, the fine arts and music, and social developments.

117. Ancient Greece

Greece from the Minoan period to the death of Alexander the Great.

118. Roman Republic

Rome from the origins of the city to the collapse of the Republic and the establishment of a military dictatorship.

120. Western Barbarians, 500–1100

The barbarians of Western Europe from their first appearance on the borders of the Roman Empire to their eventual civilization.

§ Course included in Women's Studies Program

121. Crusading Age, 1000–1450

Europe from the formation of an aggressive, united Christendom to the collapse of unity with the rise of nation-states.

123. Spain

The course considers the experience of the peoples of Spain from earliest times to the present. Chief emphasis will be given the period from Ferdinand and Isabella to the late seventeenth century (the *Siglo de Oro*) and to the crises of twentieth-century Spain.

124. Mediterranean Europe

The Mediterranean basin, stressing its importance in the development of European societies and economics.

126. Renaissance and Reformation: Europe, 1350–1610

Beginning with the Autumn of the Middle Ages, the course will consider the main developments of the era: the Italian Renaissance; the formation of the Early Modern State, dynastic struggles and the Ottoman menace; European overseas discoveries and expansion; the Protestant Reformation and Catholic response; and religious rebellion and wars. Attention will be given to cultural, artistic, and intellectual developments.

127. The Age of Louis XIV: Europe, 1610–1789

Voltaire (1695–1778) dubbed his era the Age of Louis XIV (1638–1715), and claimed that it was an age of great artistic and unprecedented scientific achievement. The course will focus on this age of genius in all its variety: the refinement of government, the waging of war, advances in thought, changing tastes in art, the life of the Old Regime before the coming of the revolution.

128, 129. Germany

The social, economic, political, and cultural development of the German nation—128: Germany from 1640 to 1890; 129, Germany from 1890 to the Third Reich.

130. Ireland

A study of Irish history since the Reformation emphasizing conflict between the Protestant ascendancy and the Catholic population. The modern division of Ireland.

131, 132. England

Growth of the English state and constitution. Continental ambitions of England during the Middle Ages. Tudors and the English reformation; constitutional struggle under the Stuart monarchs; development of Modern English government emphasizing political reforms of the nineteenth century; Britain's role in the modern world.

136, 137. Russia

Political, social, and religious formation of early Russia; the reforms of Peter the Great; Russian absolutism and the impact of Western Europe in the eighteenth and nineteenth centuries; the Russian Revolution and economic and political developments in the Soviet Union.

144. European Diplomatic History

A study of the relations of major European powers since 1870, with emphasis on economic, political, and social forces that influenced these relations.

197.30. Special Topics in Antiquity

Occasional lecture courses in special topics in Antiquity.

197.40. Special Topics in European History

Occasional lecture courses in selected topics in European history.

198.30. Seminar in Antiquity

Historical seminars emphasizing original research and group discussion of selected problem and periods. *Prerequisite: History 100.*

198.40. Seminar in European History

Historical seminars emphasizing original research and group discussion of selected problems and periods. *Prerequisite: History 100.*

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in European history. Only with permission of Dean, Department Chair, and Instructor.

African History

46. Selected Revolts

A comparative study of the causes, successes and failures of selected revolutions and rebellions, emphasizing revolutionary leadership, ideology, and organization.

55. Introduction to African History and Cultures

An historical survey of the origins and development of African cultures from ancient times to the onset of European colonialism in the nineteenth century. The survey focuses on selected civilizations and societies and explores the patterns of African social, economic, and political life.

150. Women in Islamic and African Societies§

A comparative analysis of the legal position of women and their social, economic, and political roles in different African and Middle Eastern cultural settings.

151. Origins and Development of Islam

The prophethood of Muhammed and the Muslim Revolution. Islamic conquests and formation of Muslim institutions. The development of philosophy, law, and art during the "golden age" of Islam. Fragmentation of the Muslim empire; the rise of Turkish power; the Crusades.

152. Modern Middle East and North Africa

European imperialism and the development of Arab nationalism. Problems of economic development, political stability, and military conflict.

153. Southern Africa

Economic, social, and political history of the peoples of southern Africa. Emphasis on African initiative and resistance to white encroachment and the rise of Afrikaner nationalism.

154. Modern Africa

Topics in African history dealing with African institutions and culture in the imperial era, the rise of nationalism, the effects of social and economic change within the colonial situation.

155. Independent Africa

Topics in African history dealing with African economic, social, and political problems after independence. Major ideologies will be examined.

195. Africa, European Expansion, and the New World

An historical examination of the interaction of European and African cultures, the impact of the Atlantic slave trade and New World slavery on the development of the world economic system, and the development of African societies in the New World.

197.60. Special Topics in African History

Occasional lecture courses in special topics in African History.

198.60. Seminar in African History

Historical seminars emphasizing original research and group discussion of selected problems and periods. *Prerequisite: History 100.*

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in African history. Only with permission of Dean, Department Chair, and Instructor.

Asian History

51. Introduction to Chinese Civilization

Chinese history and culture from the dawn of civilization to the post-Maoist present. Topics covered will be ancient philosophies, Confucianism, traditional political institutions, the use of urbanization, the impact of the West, twentieth-century reform and revolution, and modern society, politics, and economics.

§ Course included in Women's Studies Program

52. Introduction to Japanese Civilization

Two thousand years of Japanese history and culture, including the age of classical civilization, the rise of feudalism and shogunal government, nineteenth century modernization, imperialism and war in the twentieth century, and Japan's phenomenal postwar successes in social change and economic growth.

103. Women in Asia§

Gender as an historical category in analyzing the impact of change in East Asia from the traditional to the modern period. Changing roles and status of women under industrialization, intellectual development, and legal reform.

156. Traditional and Early Modern Japan

Japan from prehistoric times to the mid-nineteenth century. Japan's adaptation of Chinese civilization; cultural and literary history; political effects of socio-economic changes from the classical period through feudalism, to the eve of Japan's interaction with the West; ideological developments that conditioned Japan's response to Western encroachment.

157. Modern Japan

Consideration of major themes in Japanese modern history since 1868. Japan's nineteenth-century "economic miracle" and the problems faced by a rapidly modernizing agrarian economy; nationalism, imperialism, and their effects on foreign policy; adaptation of Western ideals and institutions; social and political movements in the twentieth century, especially the suffrage and labor movements; Japan's postwar reconstruction.

158. Premodern China

Chinese civilization from the earliest times to the Western intrusion. Dominant historical and cultural patterns, evolution of Confucianism, Taoism, and Buddhism, development of political institutions, analysis of preindustrial economic experience and state-society relations.

159. Modern China

Analysis of the revolutionary changes that have swept China during the nineteenth and twentieth centuries. Equal emphasis will be placed on the disintegration of the old society in the last century of imperial rule and the efforts of twentieth-century revolutionaries to reintegrate and rebuild China. Attention will be paid to intellectual and cultural changes and to the roles of the West and indigenous forces shaping China's modern evolution.

160. Imperialism in East Asia

Social, political, and economic effects of imperialism in China, Korea, and Vietnam in the nineteenth and twentieth centuries; theories of colonialism and dependency and their application to East Asia.

161. Modern U.S.-Japan Relations

The United States and Japan, from war through occupation. This course will examine diplomatic relations from the 1930s to the San Francisco Peace Treaty (1951), the content of America's postwar military occupation of Japan, and Japanese society under strains of both the war and an occupied peace.

197.70. Special Topics in Asian History

Occasional lecture courses in special topics in Asian history.

198.70. Seminar in Asian History

Historical seminars emphasizing original research and group discussion of selected problems and periods. *Prerequisite: History 100.*

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in Asian history. Only with permission of Dean, Department Chair, and Instructor.

§ Course included in Women's Studies Program

Latin American History

61, 62, 63. Latin American Survey

The evolution of Latin American culture and civilization from Pre-Columbian to recent times, emphasizing political, economic, and social institutions, and the forces for change and modernization.

64. Central America

A survey of Central America from independence to the present. The course focuses on three Central American countries: Nicaragua, Guatemala, and El Salvador. Course emphasis on recent developments, social, economic and political problems (militarism, dictatorship) and the nature of U.S. policy vis-a-vis Central America.

162. Colonial Mexico

Mexico from the Mayas and Aztecs to the end of the independence movement in the nineteenth century. Includes study of the economic, social and cultural developments.

163. Modern Mexico

The national period from the 1824 federal republic to the present. Special emphasis on those factors in the more recent past which have contributed most to modern Mexico.

164. Inter-American Community

Political, economic, and social relations between the countries of the two Americas and of their activities in regional and world organization.

165. Argentina

Political, social and economic developments in this leading country of South America from pre-Columbian times to present, with special emphasis on its modern national development.

166. The Mexican Revolution

An analysis of the Mexican Revolution from 1910 to the present. The course examines the Porfirian structures that caused the Revolution, the period of warfare and caudillismo (i.e., Emiliano Zapata, Pancho Villa), and the institutionalization of the Revolution to the present. Emphasis on the issues of militarism, social, political, and economic reforms, the Mexican-U.S. relations.

167. Brazil

An analytical study of Brazil's past and present: the colonial era, the New World monarchies of Pedro I and II, and the Republic. Emphasis on social and economic developments.

169. Contemporary Latin America

A topical study of twentieth century political, economic and social life. The dynamics of traditional legacies and reform programs. Ideals and realities of inter-American relations. Cultural characteristics. Present trends and prospects.

197.80. Special Topics in Latin American History

Occasional lecture courses in special topics in Latin American history.

198.80. Seminar in Latin American History

Historical seminars emphasizing original research and group discussion of selected problems and periods. *Prerequisite: History 100.*

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in Latin American history. Only with permission of Dean, Department Chair, and Instructor.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICS

Professors: Gerald L. Alexanderson, *Chair,* Karel L. de Bouvere, S.C.J., Paul R. Halmos
Associate Professors: Vladimir Drobot, Leonard F. Klosinski, David E. Logothetti, Dale H. Mugler
Asssistant Professors: Frank A. Farris, Evan D. Fisher, John M. Sawka, Daniel C. Sloughter, Dennis C. Smolarski, S.J.
Lecturers: Alice J. Kelly, Jean J. Pedersen, Peter Ross
Michael and Elizabeth Valeriote Professor: Gerald L. Alexanderson

The Department of Mathematics offers major programs leading to the B.S. in Mathematics or the B.S. in Computer Science (Mathematics), as well as required and elective courses for students majoring in other fields. Either major may be pursued with any of three principal goals: preparation for graduate studies leading to advanced degrees in mathematics, computer science, statistics, operations research, or other fields; preparation for secondary school teaching of mathematics or computer science; or preparation for a career in research in industry or government. The major in mathematics may be taken with emphasis in computer science or in mathematical economics.

Graduate work is offered in the department for the degree Master of Science in the Teaching of Mathematics: for a description of this degree, see the Graduate Programs Bulletin. For a description of the degree of Master of Science in Applied Mathematics offered by the School of Engineering, see the School of Engineering Graduate Bulletin.

Requirements for the Bachelor of Science Degree in Mathematics

In addition to completing the University and College requirements for the Bachelor of Science degree (see page 24), candidates for the B.S. in Mathematics must complete the following requirements.

1. Mathematics 11, 12, 13, 21, 52, and 53
2. Seven upper division courses in mathematics, two of which must be Mathematics 102 and either 111 or 176 (or both). Mathematics 111 should be taken by students planning to do graduate work in mathematics; 176 is more suitable for students planning work in computer science or other applied areas. Students planning to undertake graduate studies in mathematics should plan to take, in addition to 102 and 111, Mathematics 105, 112, 113, 144, and 154.
3. Mathematics majors are required to demonstrate the ability to read a mathematical work in French, German, or Russian prior to graduation.
4. Physics 4 and 5. Students with a special interest in the application of mathematics in the social sciences or economics may substitute Economics 170, 171, or 177 for Physics 5. Students planning to teach in secondary schools may substitute, with approval of the Chair of the Department, Physics 104 and 105 for Physics 4 and 5.

Students electing the B.S. in Mathematics with emphasis in Computer Science should take Mathematics 10 and 61, Electrical Engineering and Computer Science 22 and at least four from the following list: Mathematics 122, 123, 144, 154, 161, 162, 163, 164, 165, 166, 167, 168, 176, 177. Mathematics 22 and 32 are recommended.

Requirements for the Bachelor of Science Degree in Computer Science (Mathematics)

In addition to completing University and College requirements for the Bachelor of Science degree (see page 24), candidates for the B.S. in Computer Science (Mathematics) must complete the following courses.

1. Mathematics 10, 11, 12, 13, 21, 22, 32, 52, 53, and 61
2. Three upper division mathematics courses on the following list and two upper division mathematics courses not on the list: Mathematics 144, 161, 162, 163, 164, 165, 166, 167, 168, 176, and 177
3. Physics 4 and 5
4. Electrical Engineering and Computer Science 22 and 121 and one additional upper division course in EECS

Emphasis in Mathematical Economics

The Departments of Mathematics and Economics jointly offer a program providing an emphasis in mathematical economics. Students wishing to participate major in either mathematics or economics but pursue a course of study that emphasizes the use of mathematics in the study of economics. Participation in the program is noted on the student's transcript. This program is especially suited for those planning graduate work or careers in mathematical economics, actuarial science, operations research, and related fields. All students in the program must complete the following in addition to university and college requirements as well as specific requirements in their major departments:

1. Economics 114, 115, 170, 171, and 177
2. Mathematics 21, 22 52, 53, and 102
3. Mathematics 122, 123, or Economics 174

Full descriptions of the program may be obtained from the Chairs of the Departments of Economics or Mathematics.

Teaching Credential Program

Students planning a career in secondary school teaching must fulfill the requirements for the teaching credential. In addition to the requirements for the B.S. in Mathematics, or the B.S. in Computer Science (Mathematics), they must complete the following courses

1. English 178
2. Speech 1
3. Education 199
4. Mathematics 10, 101, 111 and 176, 122, 123, 134, 172 and 175

As noted above Physics 104, 105 can be substituted for Physics 4 and 5.

Honors Program

The Department of Mathematics maintains a program for the discovery, encouragement, and development of mathematical talent among undergraduates. This program includes special sections, seminars, individual conferences and directed study guided by selected faculty members. Students are also encouraged to participate actively in research projects directed by faculty.

4. Mathematics for Elementary Teachers I

A problem-solving and logical thinking approach to whole numbers; their nature, counting, place value, computational operations, properties, and patterns. Intuitive two-dimensional geometry and measurement, especially metric. Mathematics 2 and 4 cannot both be taken for credit. Does not fulfill the university core curriculum requirement.

5. Mathematics for Elementary Teachers II

A problem-solving and logical thinking approach to fractional numbers, integers, rational numbers and real numbers; their nature, computational operations, properties, and patterns. Intuitive three-dimensional geometry and measurement, especially metric. Functions, relations, and graphs. While Mathematics 4 is recommended as a prerequisite, it is not required.

6. Mathematical Analysis for Social Science I

An introduction to finite mathematics with applications to the social sciences. Sets, logic, combinatorial problems, probability, vectors, and matrices.

7. Mathematical Analysis for Social Science II

An introduction to differential and integral calculus with applications to the social sciences. Mathematics 7 and Mathematics 11 cannot both be taken for credit.

8. Introduction to Statistics

Elementary topics in statistics chosen from descriptive statistics, probability, random variables and distributions, sampling, estimation, hypothesis testing, regression, and correlation. *Prerequisite: Mathematics 6, 7, or 9 or equivalent.*

9. Algebra and Trigonometry

Topics in college algebra and trigonometry. Intended for students who wish to take further work in mathematics. Permission to enroll must be obtained from the Chair of the Department.

10. Introduction to Computer Science

Introduction to computer science and programming. Topics include structured programming techniques using Pascal and FORTRAN, machine structure, elementary algorithms, and data structures. Primarily (but not exclusively) for majors in Computer Science, Mathematics, and Physical Sciences. Mathematics 10 may not be taken for credit if student has already received credit for a course in Pascal or FORTRAN (e.g., Engineering 3, EECS 16, DIS 30). *Prerequisite: Mathematics 11 (may be taken concurrently).*

11. Analytic Geometry and Calculus I

Differentiation and applications, integration. Mathematics 7 and Mathematics 11 cannot both be taken for credit. *Prerequisite: four years of high school mathematics*

(including trigonometry) or satisfactory grade in Mathematics 9.

12. Analytic Geometry and Calculus II

Continuation of 11. Methods and applications of integration, transcendental functions, determinants, and linear equations.

13. Analytic Geometry and Calculus III

Polar coordinates, hyperbolic functions, vectors, derivatives of vector functions, parametric equations, plane and solid analytic geometry, partial differentiation. *Prerequisite: Mathematics 12.*

21. Analytic Geometry and Calculus IV

Applications of partial differentiation, multiple integration, infinite series, complex numbers, and functions. *Prerequisite: Mathematics 13.*

22. Differential Equations

Use of series, numerical and Laplace transform methods in solving differential equations. Applications. *Prerequisite: Mathematics 21.*

32. Mathematical Logic

Informal and formal methods in elementary logic. Arithmetical representations of statement calculus. Boolean algebras of sets, of statements, and of electrical switches. For students in computer science and/or students planning to pursue further work in logic and foundations. Recommended for Mathematics 133.

41. The Nature of Mathematics

A course designed for liberal arts students. Topics will be chosen from the theory of numbers, combinatorics, geometry, and other areas to allow students to participate in the discovery and development of mathematical ideas. Problem solving is emphasized and there is some discussion of the history of mathematics.

51. Discrete Mathematics

Relations and operations on sets, orderings, elementary combinatorial analysis, recursion, algebraic structures, graphs. For computer science majors in the School of Engineering.

52. Introduction to Modern Algebra

Groups, fields, integral domains, applications to number theory. Polynomials and polynomial equations.

53. Linear Algebra

Vector spaces, linear transformations, algebra of matrices, quadratic forms, characteristic equations. *Prerequisite: Mathematics 13.*

61. Data Structures

Analysis of structures used for computer data storage (arrays, records, stacks, queues, linked lists, trees). Introduction to algorithms associated with various data types (sorting, searching, tree traversal, large integer arithmetic), and to general programming techniques (recursion, iteration). *Prerequisite: Mathematics 10.*

90. Lower Division Seminars

Basic techniques of problem solving and topics in algebra, geometry, and analysis.

NOTE: Some upper division courses listed below that are suggested for Computer Science (Mathematics) majors may presuppose the ability to write computer programs in some language, even though Mathematics 10 is not explicitly listed as a formal prerequisite.

101. A Survey of Geometry

Topics from projective, advanced Euclidean and non-Euclidean geometries.

102. Advanced Calculus

Vector calculus, functions of several variables, elliptic integrals, line integrals, uniform convergence, introduction to Fourier series.

105. Theory of Functions of a Complex Variable

Analytic functions, Cauchy integral theorems, power series, conformal mapping. Riemann surfaces.

111. Abstract Algebra I

Topics from the theory of groups. *Prerequisites: Mathematics 52 and 53.*

112. Abstract Algebra II

Rings and ideals, algebraic extensions of fields, Galois Theory. *Prerequisite: Mathematics 111.*

113. Topology

Set theory insofar as pertinent to the course. Topological spaces, continuous functions, product spaces. Separability and compactness. Metric spaces and metric topologies.

122. Probability and Statistics I

Kolmogorov's axioms; conditional probability; independence; random variables; discrete and continuous probability distributions; expectation; moment-generating functions; Weak Law of Large Numbers; Central Limit Theorem. *Prerequisite: Mathematics 21.*

123. Probability and Statistics II

Estimation and hypothesis testing, including maximum likelihood estimation, likelihood ratio tests, and sampling from the normal distribution. Applications. *Prerequisite: Mathematics 122.*

133. Logic and Foundations

Deductive theories. Theories and models. Consistency, completeness, decidability. The theory of models. The cardinality of models. Some related topics of metamathematics and foundations. This course is open to upper division students of science and mathematics and to philosophy majors having sufficient logical background. *Prerequisite: Mathematics 32 or equivalent.*

134. Set Theory

Naive set theory. Cardinal and ordinal arithmetic. The axiom of choice and the continuum hypothesis. Axiomatic set theory.

144. Partial Differential Equations

Special topics in higher mathematics useful in applications to the physical sciences, such as special functions of mathematical physics. Fourier series, partial differential equations, and boundary value problems.

153. Intermediate Analysis I

A rigorous investigation of the real number system. Concepts of limit, continuity, differentiability of functions of one real variable, theorems of differential and integral calculus. *Prerequisite: 102.*

154. Intermediate Analysis II

A continuation of 153.

155. Ordinary Differential Equations

Existence and nature of solutions; oscillation theory, orthogonal functions. Partial differential equations. *Prerequisite: Mathematics 102.*

161. Automata Theory

Mathematical preliminaries. Formal systems; tabular and graphical representation of automata. Deterministic and nondeterministic finite automata; conversion. Parallel and serial decomposition. Turing machines and the halting problem. Finite transducers, acceptors, and generators; theory of translations. *Prerequisites: Mathematics 52 and 61 or equivalent.*

162. Formal Languages

Formal grammars: definitions and classifications. Classes of languages. Normal forms. Grammars as language generators and recognizers. Finite state machines, pushdown automata. Unsolvability; Post Correspondence Problem; Kleene hierarchy. LL and LR grammars; applications to recognition of context-free-languages. *Prerequisite: Mathematics 161.*

163. Theory of Algorithms

Preliminaries: measuring work done by algorithms. Nonnumerical algorithms include searching, sorting, graph spanning and traversal, string matching. Numerical topics include polynomial and matrix arithmetic. P and NP completeness. *Prerequisites: Mathematics 51 or 52, and 61 or equivalent.*

164. Computer Simulation

Techniques for generation of probability distributions. Computer models of queueing, in inventory and scheduling. Simulation of economic systems. Monte-Carlo methods for physical systems. NCX*

165. Linear Programming

Algebraic background. Transportation problem. General simplex methods. Linear programming and theory of games. Numerical methods.

166. Numerical Analysis

Numerical algorithms and techniques for solving mathematical problems such as linear systems, integration, approximation of functions, solution of nonlinear equations. Analysis of errors involved in the various methods. Direct methods and iterative methods. (The ability to program in some scientific language is assumed.)

167. Switching Theory and Boolean Algebra

Switching algebra and Boolean algebra. Minimization via Karnaugh Maps and Quine-McCluskey, state compatibility and equivalence. Machine minimization. Faults. State identification, finite memory, definiteness, information losslessness.

168. Computer Graphics

Systematic and comprehensive overview of interactive computer graphics such as mathematical techniques for picture transformations, curve and surface approximations.

170. Development of Mathematics

A selection of mathematical concepts given with their historical context. Upper division standing in a science major is required.

172. Problem Solving

Use of induction, analogy, and other techniques in solving mathematical problems.

174. Differential Geometry

Introduction to curves and surfaces. Differential forms, Frenet formulas, frame fields, differentiation on surfaces. *Prerequisite: Mathematics 53.*

175. Theory of Numbers

Fundamental theorems on divisibility, primes, congruences. Number theoretic functions. Diophantine equations. Quadratic residues. Partitions.

176. Combinatorics

Permutations and combinations, generating functions, recursion relations, and a selection of topics from combinatorial geometry, graph enumeration, Polya counting theorem.

177. Graph Theory

Selected topics from planarity, connectedness, trees (enumeration), digraphs, graph algorithms, and networks.

190. Upper Division Seminars

Advanced topics in algebra, geometry, or analysis. Research projects.

196. Advanced Topics

A course offered each year in an advanced area of mathematics not ordinarily covered in the regularly offered courses, often in an area of current interest.

199. Independent Study

Reading and investigation for superior students under the direction of a staff member. This can be used only to extend, not to duplicate, the content of other courses.

NOTE: Some upper division courses, e.g., 101, 111, 112, 113, 133, 134, 144, 153, 154, 155, 164, 165, 167, 168, 172, 174, 175, and 177 are offered only in alternate years.

* Exempted from challenge

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF MODERN LANGUAGES AND LITERATURES

Professors: Francisco Jiménez, Victor B. Vari
Associate Professors: Heribert Breidenbach, *Chair*, Andrew I. Rematore, K-G Seely, Christian van den Berghe
Assistant Professors: Cedric Busette, Tonia C. Riviello
Lecturers: Catherine M. Howard, Verónica González-Mena LoCoco, Gudrun Tabbert-Jones
Harold and Edythe Toso Professor: Victor B. Vari

The Bachelor of Arts degree in French, German, Italian, or Spanish is designed to aid students in achieving proficiency in both the oral and written language. The program also aims at providing students with an understanding of the experiences, values, and traditions of those people whose language is studied. Courses range from beginning language to linguistics, from an introduction to literary texts to advanced courses in literature and culture.

Requirements For Major

In addition to university and college requirements for the Bachelor of Arts degree (page 23) and such lower division courses as the individual candidate may need, each major must complete a minimum of eight upper division courses in either French, German, Italian, or Spanish. Each major program requires completion of language 100 and 101 or the equivalent as prerequisite to more advanced work. All major programs must be approved by the student's faculty adviser.

Single-Subject Credential "Waiver" Program

The state of California requires that all students seeking a credential to teach French or Spanish in California secondary schools, in addition to completing a fifth year of studies and student teaching, pass the National Teacher Examination or complete a state-approved program of studies in the subject. The California State Commission on Teacher Credentialing has approved programs for the University of Santa Clara in French and in Spanish. For the specific requirements, consult the introductory statements to the course listings in those languages.

High School Credit and Placement

The Department of Modern Languages recommends the following formula for students who wish to continue a language studied in high school. Those who have had two years of language should enter Language 2; those with four years of language should enter Language 22; those with three years of language should consult the language faculty. Students whose language background is inadequate to permit following the above formula may be permitted to enter lower-numbered courses for credit after consultation with a member of the language faculty.

Students having the necessary proficiency, as demonstrated by interview with a member of the language faculty, may enroll in higher-numbered courses than

those of the placement formula. Once proficiency is established, lower division students may enroll in one upper division course per quarter with the permission of the instructor. Such courses will be counted as fulfilling major requirements.

Courses Exempted from Challenge

Courses numbered 1 through 101 are not open to challenge.

Media Laboratory

Throughout lower division courses, and in such upper division work as the instructor may specify, students will be required to use the facilities of the media laboratory to increase their language skills. Students may establish their own schedule of attendance.

Conversation Groups

As an adjunct to intermediate and advanced courses, the department offers students the opportunity to participate in small conversation groups of five or six students, under the direction of a native speaker or an advanced major. Those interested in such activities should consult individual language teachers for further details.

FRENCH

(See general statement, page 79)

Bachelor of Arts in French

The major program consists of a minimum of eight courses of upper division work in French, including French 185 (Applied Linguistics) or its equivalent, as approved by the student's major adviser. Recommended electives include courses in French or European history, comparative literature, art history, philosophy of language, and additional work in linguistics.

The French "Waiver" Program (for prospective teachers only)

Required:

1. French 1, 2, 3, 21, 22 (or equivalent); 100, 101, 110, 111, and 185
2. Four courses in French literature, two of which are recommended from courses on seventeenth, nineteenth, or twentieth century literature, for a minimum of 45 quarter units of upper division French.
   Note. Although French 199 (Directed Reading) may be counted toward the French major, it does not fulfill any of the requirements *for this program.*
3. Two courses in European and/or French history
4. One course in history of art that includes a focus on French artists

Recommended:

1. French 50, 172, Education 98/198.02, Psychology 187, English 180.
2. While not required, experience or study abroad in Paris or Nantes (I.E.S.) is encouraged and recommended (see Studies Abroad, p. 166)

"Waiver" Program students are expected to maintain a 3.0 grade point average in the French major and a cumulative grade point average of 2.75. Each student's oral proficiency in the French language will be assessed by a designated member of the French faculty, regardless of the individual's grade point average or course work completed.

1. Elementary French I

Development of skills in understanding, speaking, reading, and writing French. Laboratory attendance required.

2. Elementary French II

A continuation of French 1.

3. Elementary French III

Completion of elementary French.

21. Intermediate French I

Review of spoken and written French. Readings in original prose. *Prerequisite: French 3 or equivalent.*

22. Intermediate French II

Continued review of the French language. Discussions of readings (short stories, novellas, and/or plays).

50. French Conversation

Intensive work stressing the single skill of French conversation in everyday situations. *Prerequisite: French 22 or equivalent.* Permission of instructor is required in advance of registration. Offered on a P/NP basis only. No auditors will be admitted.

100. Advanced French I

Intensive grammar, speaking, and composition. Additional activities include research projects and/or participation in theatricals. Required of all majors.

101. Advanced French II

Introduction to literary analysis in poetry, prose and drama. Required of all majors.

110. Culture and Civilization I

Cultural, political, economic, artistic, educational, and social aspects of French-speaking societies (France, Belgium, Switzerland, Canada; French in Africa). Cross-cultural comparative approaches.

111. Culture and Civilization II

A continuation of French 110, but may be taken independently.

120. Moyen Age

The epic, lyric, and courtly literature of Medieval France: Roland, *l'amour courtois* and the Troubadours, Chrétien de Troyes, *Tristan et Iseut,* the early theatre.

130. Sixteenth Century

La Renaissance: readings in Rabelais, the Pléiade poets, and Montaigne.

140. Seventeenth Century

Le Grand Siècle: evolution of literary and philosophical currents with emphasis on Corneille, Racine, Molière, La Fontaine, Descartes, Pascal, etc.

150. Eighteenth Century

Le Siècle des lumières: studies in the literature and thought of the Age of Enlightenment with emphasis on Montesquieu, Voltaire, Diderot, and Rousseau.

160. Nineteenth Century I

Romantic literature: prose and poetry (Chateaubriand, Stendhal, Lamartine, Hugo, Balzac, Vigny, etc.).

161. Nineteenth Century II

Realist, Naturalist and Symbolist literature (Baudelaire, Flaubert, Zola, Mallarmé, etc.).

170. Twentieth Century I

The writings of *la belle époque* and *entre deux guerres* (Proust, Gide, Apollinaire, Malraux, etc.).

171. Twentieth Century II

The *engagée* literature, the Anti-theatre, the New Novel, and current directions (Anouilh, Sartre, Camus, Ionesco, Robbe-Grillet, Tournier, etc.).

172. Cinéma

Origins and development of the art of film in France. Not a course in filmmaking. The main concern is the evolution of cinematic theory and technique as exemplified in the feature films of individual directors. There are weekly screenings with discussions, analyses, and *travaux pratiques.* No unofficial auditors will be admitted.

180. Seminars

Variable topics in language, literature, and film. May be retaken for credit.

182. Women in French Literature: Authors and Characters§

Study of works of outstanding French women writers from the Middle Ages to the present time (Marie de France, Madame de Lafayette, Georges Sand, Colette, Marguerite Duras, Simone de Beauvoir).

185. French Applied Linguistics

Aspects of Modern French linguistics with special emphasis on phonology and phonetics. Required of all majors.

199. Directed Reading

Individually designed programs of advanced readings. Written permission of the Instructor, Department Chair, and Dean required in advance of registration.

GERMAN

(See general statement, page 79)

Bachelor of Arts in German

The major program includes a minimum of eight upper division courses in German. Recommended elective courses include English 101 (Introduction to Linguistics), English 102 (Modern Grammar), and History 128 or 129 (Germany).

1. Elementary German I

Development of skills in understanding, speaking, reading, and writing modern German, together with cultural information on the German-speaking countries. Work in language laboratory required.

2. Elementary German II

A continuation of German 1.

3. Elementary German III

Completion of elementary German.

5. German for Reading Knowledge

An alternate to German 3 leading to the reading of scholarly articles partially in the student's particular field of study. *Prerequisite: German 2.*

21. Intermediate German I

Systematic review of German grammar, short stories, or essays on culture and civilization, progressive exercises in conversation.

22. Intermediate German II

A continuation of German 21. Accelerated readings, conversation, and writing.

100. Advanced German I

Advanced reading, composition, and conversation. Emphasis is on conversation and

§ Course included in Women's Studies Program

career-oriented language. Required of all German majors.

101. Advanced German II

Reading of literary texts, composition, and discussion. Required of all majors. Completion or equivalent knowledge will admit students to higher-numbered courses.

110. History of German Civilization

A cultural history of the German-speaking countries from earliest times to 1945.

111. Contemporary German Civilization

Culture, education, politics, and the economy in the German-speaking countries since 1945.

130. The Classical Age

Major works by Goethe and Schiller.

140. Nineteenth Century Romanticism

The philosophy of the Romantics. The German fairy tale and selected works by Kleist, Eichendorff, Heine, and Wagner.

141. Nineteenth Century Realism

The age of social awakening. Works by Büchner, Hebbel, Fontane, Hauptmann, and Marx.

150. Twentieth Century Novel

Works by Kafka, Hesse, Thomas Mann, Christa Wolf, Böll, and others.

151. Twentieth Century Drama

Plays by Brecht, Borchert, Frisch, and Dürrenmatt, as well as Brecht's theoretical writings.

160. The German Novelle

Characteristic features of the *Novelle* as opposed to *Roman* and *Erzählung*. Examples from Theodor Storm to Thomas Mann.

161. Survey of Lyric Poetry

An introduction to the analysis of poetry and numerous examples from all German literary periods beginning with 1600.

175. German Applied Linguistics

Aspects of modern German linguistics with emphasis on phonology, phonetics and contrastive analysis of German and English.

180. Special Topics

Variable topics in culture and literature. May be retaken for credit.

199. Directed Reading

Individually designed programs of advanced readings. Written permission of the Instructor, Department Chair, and Dean is required in advance of registration.

Literature in Translation

NOTE: Courses in literature in translation cannot be used to fulfill the foreign language requirement.

115. German Literature in English Translation

Reading and analysis of masterpieces of German literature written between 1750 and 1970. Selection dependent upon available translations.

ITALIAN

(See general statement, page 79)

Bachelor of Arts in Italian

The major program includes a minimum of eight upper division courses in Italian. Recommended electives include courses in mythology, comparative literature, and Renaissance history.

1. Elementary Italian I
Development of skills in understanding, speaking, reading, and writing modern Italian. Work in language laboratory required.

2. Elementary Italian II
A continuation of Italian 1.

3. Elementary Italian III
Completion of elementary Italian.

21. Intermediate Italian I
Review of fundamentals of spoken and written Italian. Progressive readings reflecting Italian culture and values. Progressive exercises in conversation and composition. *Prerequisite: Italian 3 or equivalent.*

22. Intermediate Italian II
A continuation of Italian 21.

100. Advanced Italian I
Composition, reading, and conversation. Required of all majors.

101. Advanced Italian II
Composition, reading, and conversation. A continuation of Italian 100. Required of all majors.

110. Italian Civilization
Fundamental aspects of Italian history, art, and culture from their origins to the present day.

120. Survey of Italian Literature I
From its origin to the *settecento.*

121. Survey of Italian Literature II
From the *ottocento* to the present.

130. Dante, La Divina Commedia I
Inferno and *Purgatorio.*

131. Dante, La Divina Commedia II
Purgatorio and *Paradiso.*

140. Duecento, Trecento
Emphasis on Dante's minor works. Petrarch's poetry, and Boccaccio's *Decameron.*

150. Quattrocento, Cinquecento (Rinascimento)
Important trends in the literary masterpieces of the Renaissance–significant works of Ariosto, Tasso, Leonardo, Machiavelli, Lorenzo de Medici, Poliziano, Castiglione.

160. Settecento
The salient works of Vico, Goldoni, Parini, and Alfieri.

170. Ottocento—I Promessi Sposi
The works of Foscolo, Leopardi, Manzoni's poetry, Carducci, Pascoli and Verga will also be discussed.

180. Novecento
Italian literature of the twentieth century with main trends in poetry, drama, and the novel from Pirandello to the present.

199. Directed Reading
Individually designed programs of advanced readings. Written permission of the Instructor, Department Chair, and Dean required in advance of registration.

Japanese

1. Elementary Japanese I

Development of skills in understanding, speaking and reading modern Japanese. Work in language laboratory required.

2. Elementary Japanese II

A continuation of Japanese 1. Writing in *Kana* syllables and in *Kanji* (Japanese characters) is introduced.

3. Elementary Japanese III

Completion of elementary Japanese.

21. Intermediate Japanese I

Review of spoken and written Japanese. Advanced exercises in conversation and composition. *Prerequisite: Japanese 3 or equivalent.*

22. Intermediate Japanese II

A continuation of Japanese 21.

Spanish

(See general statement, page 79)

Bachelor of Arts in Spanish

The major program consists of a minimum of eight upper division courses in Spanish, including Spanish 175 (Applied Linguistics). Majors may choose to concentrate in the Latin American or Spanish Peninsular area, or may combine the two fields, but all major programs must be approved by the student's faculty adviser. Courses in the history of Latin America and Spain are recommended. Spanish 175 and 176 are required of all students preparing to teach Spanish or in bilingual/cross-cultural programs at any level.

The Spanish "Waiver" Program (for prospective teachers only)

Required:

1. Spanish 1, 2, 3, 21, 22 (or equivalent); 100, 101, 133, 175, 176
2. Four courses in Spanish literature including courses in both Latin American and Spanish Peninsular literature, for a minimum of 45 quarter units of upper division Spanish
3. Two courses in the history and culture of Hispanic civilization
4. One course in the history of art that includes Hispanic artists

Recommended:

1. Spanish 50, Education 98/198.02, Psychology 187, English 180.
2. While not required, experience or study abroad is encouraged and recommended (see Studies Abroad, p. 166).

"Waiver" Program students are expected to maintain a 3.0 grade point average in the Spanish major and a cumulative grade point average of at least 2.75. Prior to the senior year (or at the point of entry into the program if during the senior year), each student's proficiency in the writing of English and the writing and speaking of Spanish will be assessed by two or more designated members of the Spanish faculty to determine any need for further study in these areas.

1. Elementary Spanish I

Designed for those having no previous study of Spanish. Development of skills in understanding, speaking, reading, and writing modern Spanish, in that order, together with development of an understanding of Hispanic cultures. Daily work in language laboratory required.

2. Elementary Spanish II

A continuation of Spanish 1.

3. Elementary Spanish III

Completion of elementary Spanish.

11. Review of Elementary Spanish I (2 units)

Designed for those who have had previous study of Spanish, but who have been away from the language for a while, and need a review before enrolling in Spanish 2 or higher-numbered courses. Covers the same material as Elementary Spanish I but in half the class time. *Prerequisite: one or two years of high school Spanish, or equivalent.* Not open to those having college credit in Spanish.

12. Review of Elementary Spanish II (2 units)

For those who have had previous study of Spanish. Covers the same material as Elementary Spanish II but in half the class time. *Prerequisite: two years of high school Spanish, or Spanish 11, or Spanish 1.*

21. Intermediate Spanish I

Review of fundamentals of spoken and written Spanish. Progressive readings reflecting Hispanic culture and values. Progressive exercises in conversation and composition. *Prerequisite: Spanish 3 or three years of high school Spanish.*

22. Intermediate Spanish II

Systematic development of skills in understanding, speaking, reading, and writing modern Spanish. This course begins a thorough coverage of Spanish grammar, which is continued in Spanish 100 and 101. Broadening awareness of Hispanic culture and values are developed together with discussion of literary works. *Prerequisite: Spanish 21 or four years of high school Spanish.*

50. Spanish Conversation

Intensive work stressing the single skill of Spanish conversation in everyday situations. *Prerequisite: Spanish 22 or equivalent, and permission of the instructor.*

100. Advanced Spanish I

Composition, conversation, and grammar. Introduction to literary analysis. Required of all majors. *Prerequisite: Spanish 22.*

101. Advanced Spanish II

A continuation of Spanish 100. Required of all majors.

NOTE: Completion of Spanish 100, 101 or evidence of equivalent preparation will admit students to higher-numbered courses.

103. Spanish Grammar and Composition (2 units)

Intensive work in Spanish grammar and composition. A diagnostic-prescriptive approach based on analysis of the writing problems of students enrolled. *Prerequisite: Spanish 101 or equivalent, and permission of the instructor.* May be retaken for credit with permission of the instructor. NCX*

110. Advanced Spanish Conversation

Advanced work stressing the development of self-expression in Spanish. *Prerequisite: Spanish 101 or equivalent, and permission of the instructor.* NCX*

112. Mexican Culture

Study of Mexican literature, fine arts, history, and social developments, with particular attention to cultural values.

120. Major Works of Spanish Literature I

Readings in Spanish literature from the beginnings to the end of the seventeenth century.

* Exempted from challenge

121. Major Works of Spanish Literature II

Readings in Spanish literature of the eighteenth and nineteenth centuries. A continuation of Spanish 120, but may be taken separately.

125. Colloquium: Spanish Literature and Culture

Topic will vary. Study and discussion of selected themes in Spanish Peninsular literature and culture. May be retaken for credit. NCX*

130. Survey of Latin American Literature and Culture I

Latin American literature, fine arts, history and social developments from the pre-Columbian period to 1888.

131. Survey of Latin American Literature and Culture II

Latin American literature, fine arts, history, and social developments from 1888 to present.

133. Mexican American Literature

Reading, analysis, and discussion of Mexican American literature, with emphasis on the novel and short story.

135. Colloquium: Latin American Literature and Culture

Topic will vary. Reading and discussion of selected themes in Latin American literature and culture. May be retaken for credit. NCX*

140. Modern Latin American Literature I

Reading, analysis, and discussion of the works of major Latin American writers of the late nineteenth and early twentieth centuries, including Azuela, Gallegos, Güiraldes, Barrios, Prado, and Romero.

141. Modern Latin American Literature II

Reading, analysis and discussion of the works of major Latin American writers of the late nineteenth and early twentieth centuries, with emphasis on the novel.

145. Contemporary Latin American Literature I

Reading, analysis, and discussion of the works of major Latin American writers from 1946 to the present, including Asturias, Carpentier, Yáñez, Fuentes, and others.

146. Contemporary Latin American Literature II

Reading, analysis, and discussion of the works of major Latin American writers of the present, including Mallea, García Márquez, Vargas Llosa, Rulfo, and others.

150. Twentieth Century Spanish Literature I

A study of the major writers of Spain from 1898 to 1936, with particular emphasis on the Generation of 1898.

151. Twentieth Century Spanish Literature II

A study of the major writers of Spain from 1936 to the present.

165. Cervantes: Don Quijote

The study of Cervantes' masterpiece, as a reflection of Spanish society during the Spanish Empire, as an exemplar of Baroque art and as a synthesis and culmination of narrative prose.

175. Spanish Applied Linguistics I

Introduction to the study of applied linguistics. Detailed scientific analysis of the phonology of modern Spanish. Contrastive analysis of Spanish and English sound systems. Required of all Spanish majors, and of all prospective teachers of Spanish and/or bilingual/cross-cultural education.

176. Spanish Applied Linguistics II

Detailed scientific analysis of the morphology and syntax of modern Spanish. Contrastive analysis within the Spanish structure system and between the Spanish and English structure systems. *Prerequisite: Spanish 175*. Required of all prospective teachers of Spanish and/or bilingual/cross-cultural education.

199. Directed Readings in Spanish

Individually designed programs of advanced readings. Written permission of the Instructor, Department Chair and Dean is required in advance of registration.

* Exempted from challenge

Literature in Translation

Note. Courses in literature in translation cannot be used as credit toward a Spanish major or a foreign language requirement.

115. Twentieth Century Mexican Literature in Translation

Reading, analysis, and discussion of outstanding works by modern and contemporary Mexican writers. Emphasis on the novel.

117. Latin American Literature in Translation

Reading, analysis, and discussion of works of leading Latin American writers, with emphasis on contemporary novelists of South America.

COLLEGE OF ARTS AND SCIENCES MULTIDISCIPLINARY STUDIES

The program in Multidisciplinary Studies has been established to meet the needs of students who wish to design a course of studies with a multidisciplinary perspective.

The student who wishes to be admitted to the program as a candidate for the Bachelor of Arts or Bachelor of Science degree in Multidisciplinary Studies must

1. be a full-time student at Santa Clara for at least one year;
2. have fewer than 111 quarter units of academic work completed at the time of application;
3. have a minimum of 3.0 grade point average;
4. submit a Petition for Admission to the Coordinator of the Program for review and approval,

The student petition should include

1. a clear, logical, and concise statement of educational objectives;
2. a well-developed argument, supported by appropriate evidence, showing that no existing academic major can meet the student's educational objectives;
3. a plan of study by academic quarter, listing courses, seminars, internships, etc., which corresponds to the student's educational objectives and fulfills the requirements of the University Core Curriculum.

The Coordinator of the Multidisciplinary Studies Program is Dr. Witold Krassowski, Department of Anthropology and Sociology.

MULTIDISCIPLINARY STUDIES/PRE-TEACHING

Multidisiplinary Studies/Pre-teaching is designed for students interested in a career in elementary school teaching. This program is approved by the California State Commission on Teacher Credentialing as a waiver from the state subject matter examination for the Multiple Subject Credential. In order to qualify for a Multiple Subject Teaching Credential, students must complete the requirements of Multidisciplinary Studies/Pre-teaching and a program in professional education, including student teaching. Professional education is offered by the Division of Counseling Psychology and Education.

Multidisciplinary Studies/Pre-teaching consists of at least 128 quarter units, divided equally among four broad areas: (1) English and Communications; (2) Mathematics and Sciences; (3) Social Sciences, and (4) Humanities and Fine Arts. The schedule of specific requirements can be obtained from the Office of the Dean.

The Coordinator of Multidisciplinary Studies/Pre-teaching is Dr. Cedric Busette, *Department of Modern Languages.*

Institutes in Multidisciplinary Studies

The College offers institutes (series of courses on a single theme), which are developed by faculty members from different disciplines and administered by the College of Arts and Sciences. Examples include institutes in Medieval Culture, Dramatic Tragedy, Sexism in American Society, Bicentennial California, Chicano Culture, Ireland, Ancient Greece, the Baroque Movement and Modernism. Admission to courses that form an institute is by permission of the director of the institute, and is normally limited to students who will register for at least two courses offered by the institute. In addition to the regular course lecturers, institute programs usually include films, guest lectures, and social events.

Courses in Multidisciplinary Studies

The College of Arts and Sciences may offer multidisciplinary courses. Offered by the College rather than by any single department, these courses often combine several academic disciplines (e.g., literature, philosophy, and religious studies) and are suitable as electives. They are designed to integrate several approaches to a single theme or topic. Open to all students of the University unless otherwise specified, these courses are especially suited to nonmajors who have a limited number of electives. One such course, for example, is offered each year.

Issues in Social Justice. This course is designed to introduce students to current social issues through films and group discussion. The films raise a number of important ethical, moral, and social problems, which are addressed by discussion and essays.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF MUSIC

Professor: Roger Nyquist
Associate Professor: Lynn Shurtleff, *Chair*
Assistant Professor: Hans Boepple
Acting Assistant Professor: Bernard Hunter

The Music Department offers major programs leading to a Bachelor of Arts degree or to a Bachelor of Music degree. The Bachelor of Arts degree is intended for those students desiring a liberal education with a music major. The Bachelor of Music degree is intended for students of high performance capability who are preparing for careers as performers.

In addition to courses designed for music majors, the department offers general courses of interest and cultural value to all University students who wish to become either trained performers or appreciative listeners.

The Music Department is a member of the National Association of Schools of Music.

Requirements for the Bachelor of Arts with a Major in Music

A student working toward a Bachelor of Arts degree in Music, in addition to completing the University and College requirements, must earn a minimum of 58 quarter units of credit in the department. The following courses must be included:

1. Music 21, 22, 23, 51, 52, 53, 54, 124, 125, 157 and 160
2. One course in the life of a composer

Music majors must also pass proficiency exams in sight-singing and piano which are administered during the freshman and sophomore years. Students are expected to perform in an ensemble during at least ⅔ of the quarters that they are in residence, and they must meet minimum departmental standards in concert attendance quarterly. They are also expected to receive private instruction in their area of specialty every quarter. Failure to complete piano and sight-singing proficiencies by the end of the sophomore year may result in ineligibility to register for upper division music courses.

Requirements for the Bachelor of Music Degree

Entrance into the Bachelor of Music degree program takes place at the end of the sophomore year of study. To be accepted into the program the student must successfully pass the Sophomore Hearing. This hearing consists of thirty minutes of music prepared to performance quality which is presented in a closed recital to the music faculty.

After acceptance to the degree program, the following requirements must be completed:

1. All requirements for the Bachelor of Arts degree;
2. At least five electives from departments outside the major;
3. Additional courses according to the area of specialty.
   Conducting Students
   Music 134
   Two courses chosen from Music 130, 135, 139, 140, 142
   Composition Students
   Music 156, 159
   One course chosen from Music 134, 135, 139, 140, 142
   Instrumental Students
   Music 134
   Two courses chosen from Music 135, 139, 140, 142, 165
   Organ Students
   Music 127
   Two courses chosen from Music 134, 135, 139, 140, 142, 155, 165

Piano Students
Music 128
Two courses chosen from Music 134, 135, 139, 140, 142, 155, 165
Voice Students
Music 129
Two courses chosen from Music 134, 135, 165, 179

4. Presentation of a Junior Recital (without credit) and
5. Presentation of a Senior Recital

Performer's Certificate

The faculty of the Music Department awards, on occasion, the Performer's Certificate, giving special recognition to excellence in musicality and technical proficiency as demonstrated through performance. All regularly enrolled students in the University are eligible. Details concerning procedure for awarding the Performer's Certificate are available in the Music Department office.

National Choral Student Award

The American Choral Directors' Association and the Department of Music provide a national award that can be given to an outstanding choral singer enrolled in the University. Continuous participation for two years in a departmental ensemble is a primary requirement. Additional criteria are available from the Department of Music.

Applied Music

(Private Instruction)

Private instruction is available in applied music. One unit of credit is given per quarter. Upper division students pursuing the Bachelor of Music degree receive three units of credit per quarter (Extra fee for all private instruction 1 through 17 and 100 through 117.) May be repeated for credit. Nine private lessons are given each quarter. Extensive individual practice is required. Open to nonmajors.

1/101. Organ

2/102. Harpsichord

3/103. Piano
Piano class must be taken as a prerequisite to private instruction for beginning students.

4/104. Voice

5/105. Violin

6/106. Viola

7/107. Violoncello

8/108. Double Bass

9/109. Brass

10/110. Woodwinds

11/111. Percussion

14/114. Guitar

15/115. Private Instruction in Composition

16/116. Private Instruction in Conducting

17/117. Private Instruction in Theory or History

199.01. Senior Recital (sixty-minute recital)

199.02. Senior Thesis For Theory, History, and Composition emphasis.
A comprehensive paper or composition approved by the faculty.

Applied Music

(Class Instruction)

74. Voice Class

Application of basic vocal techniques to develop singing facility. This course is a prerequisite to beginning private instruction. Open to nonmajors.

76. Piano Class

Classes limited to ten students. Instruction in rudiments of beginning and intermediate piano. May be repeated for credit. (Extra fee for this course.) Open to nonmajors.

77. Beginning Guitar

Introduction to the music and technique of acoustic guitar. Some review of music theory. Open to nonmajors.

78. Intermediate Classical Guitar

A continuation of Beginning Guitar. Further study of acoustic guitar theory, technique, repertoire, and stylistic practice of selected periods. May be repeated for credit. (Extra fee for this course.) Open to nonmajors.

Ensemble

70/170. Jazz Ensemble

Open to selected students for preparation and performance of literature for stage and jazz ensembles. One unit of credit given for each quarter. By audition only.

71/171. University Concert Choir

Open to selected students for preparation and performance in concert of works of the significant choral literature. One unit credit given for each quarter. By audition only.

72/172. University Chamber Singers

Open to selected students for preparation and performance in concert of works of the significant choral literature. One unit credit given for each quarter. By audition only.

73/173. University Orchestra

Open to selected students for preparation and performance in concert of works of the significant orchestral literature. One unit credit given for each quarter. By audition only.

Music History and Literature

20. Introduction to Music

How to listen to music; art of music and its materials; styles and musical forms; music of the seventeenth through twentieth centuries. Open to nonmajors. Prerequisite to all music history and composer classes in the Department of Music.

21. Music of Antiquity Through the Renaissance

A history of western music from its beginning through the sixteenth century. Open to nonmajors with permission of instructor. *Prerequisite: Music 20.*

22. Music of the Baroque Era

A history of the important musical developments from 1600 to 1750. Open to nonmajors with permission of instructor. *Prerequisite: Music 20.*

23. Music of the Rococo and Classic Eras

A history of the important musical developments from 1725 to 1830. Open to nonmajors with permission of instructor. *Prerequisite: Music 20.*

36. American Music

An examination of American music from the Colonial period to the present. Open to nonmajors.

37. History of Jazz

A survey of the origins, growth and development of Jazz; its sociological importance and influence on composers of serious music. Open to nonmajors.

38. History of Rock

Music A survey of rock music from its beginnings to the present. Special emphasis on the artistic and sociological influences of rock on today's society. Open to nonmajors.

124. Music of the Romantic Era

A history of the important musical developments from 1800 to 1900. Open to nonmajors with permission of instructor. *Prerequisite: Music 20.*

125. Music of the Twentieth Century

A history of the important musical developments from 1900 to the present. Open to nonmajors with permission of instructor. *Prerequisite: Music 20.*

127. Organ Literature

A survey of the important organ literature from 1500 to the present. Taught every other year.

128. Piano Literature

A survey of the important piano literature from 1700 to the present. Taught every other year.

129. Vocal Literature

A survey of the important vocal literature from 1600 to present. Taught every other year.

130. Choral Literature

Sacred and secular choral music from the fifteenth century to the present. Taught every other year.

134. Performance Practice Problems Since 1600

Styles of solo and ensemble performance of instrumental and vocal music from Baroque to the present. Changing aspects of medium, tempo, rhythm, dynamics, phrasing, ornamentation, articulation, temperament, etc.

135. Music Criticism

Problems, principles, and procedures of descriptive and critical analysis and synthesis; relationship of language to description and criticism.

139. J.S. Bach

Life and works of Bach, with special emphasis on development of his musical style; detailed study of a selection of his chief works. Open to nonmajors. Taught every other year. *Prerequisite: Music 20.*

140. Beethoven

Life and works of Beethoven, with emphasis on development of his musical style. Analysis of representative works. Open to nonmajors. Taught every other year. *Prerequisite: Music 20.*

142. Stravinsky

Stravinsky as a central figure of twentieth-century music; his musical styles and their sources. Open to nonmajors. Taught every other year. *Prerequisite: Music 20.*

Theory and Composition

50. Basic Musicianship

Preparatory course of Theory I. Listening techniques and basic principles of music. A student who fails this course may not major in music. Open to nonmajors. Lab required.

51. Theory I

Basic terminologies and problems of notation, melody, rhythm, harmony, and their relationship to musical form. Lecture and drill in writing melodies, sight reading, ear training and analysis. Primary triadic harmonies. Lab required.

52. Theory II

Continuation of Theory I. Secondary triadic harmonies, lecture and drill in sight singing, ear training, keyboard harmony, analysis, and composition. Lab required.

53. Theory III

Modulation and chromatic harmony. Lecture and drill in sight singing, ear training, keyboard harmony, analysis and composition. Lab required.

54. Theory IV

Analysis of twentieth-century techniques; a study of serialism and its development. Lab required.

155. Advanced Keyboard Harmony and Music Reading Skills

Intensive keyboard training in figured bass, harmonizing a given soprano, modulations to all keys, transposing, and open-score reading. Taught every other year.

156. Modal Counterpoint

Sixteenth century. Analysis of contrapuntal procedures and representative compositions; writing of motets and masses. Emphasis on style of Palestrina. For music theory and composition students only. *Prerequisite: Music 53.*

157. Tonal Counterpoint Eighteenth century.

Analysis of contrapuntal procedures and compositions; writing of inventions, chorale preludes, canons, and fugues. Emphasis on style of J.S. Bach. Taught every other year. *Prerequisite: Music 53.*

158. Orchestration

Ranges, tonal possibilities, technical limitations, and necessary transpositions for all orchestral instruments. Taught every other year. *Prerequisites: Music 53.*

159. Advanced Orchestration Required for Theory and Composition emphasis.

Practical orchestration in all its applications. *Prerequisite: Music 158*

160. Form and Analysis

Study of standard forms and analytical techniques. *Prerequisite: Music 53.*

162. Composition

Organization of musical ideals into logical and homogeneous form, with emphasis on traditional forms. *Prerequisites: Music 51, 52, and 53.*

Techniques and Conducting

165. Conducting

Baton techniques, fundamentals of score reading, rehearsal techniques, choral and instrumental tone, interpretation of music. Use of full orchestral score. Preparation and performance of major works. Taught every other year.

166. Vocal Pedagogy

Studies in techniques and materials of vocal teaching.

167. Piano Pedagogy

Studies in techniques and materials of piano teaching.

168. Organ Pedagogy

Studies in techniques and materials of organ teaching.

169. Eurhythmics

Under the Jaques-Dalcroze system, the entire body is used as an instrument to express good rhythm. Special application is made of this system using a wide gamut of musical literature. *Prerequisite: Music 20 or 50.*

179. Diction

Drills and class performance, based on international phonetic alphabet of songs in various languages.

191. Seminar in Arts Administration

Multidisciplinary studies in Fine Arts, Music, and Theatre Arts in the problems of art administration (c.f. Fine Arts, Theatre Arts).

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF PHILOSOPHY

Professor: James W. Felt, S.J.
Associate Professors: William A. Parent, Manuel G. Velasquez, S.J. *Chair*
Assistant Professors: Timothy P. Fallon, S.J., George R. Lucas, John Morreall, Cynthia C. Rostankowski, Carol J. White
Austin J. Fagothey, S.J., Visiting Professor: Onora O'Neill

Philosophy inquires directly into the relation of the human person to the world: what we are, how we know, what values are, how we live humanly. Worth pursuing for its own sake, philosophical inquiry also promotes analytical thinking and precise expression and thus is excellent undergraduate preparation for a number of professional careers, such as law, government, writing, social work and computer programing.

Requirements for Major

Students choosing philosophy as their major, in addition to the general requirements for the University and for the Bachelor of Arts degree in the College of Arts and Sciences, must complete at least twelve philosophy courses including the following.

1. Four lower division courses: the Western culture historical sequence, (Philosophy 11, 12, and 13) and Logic, (Philosophy 25). Philosophy majors must complete at least 11, 12, and 25 before enrolling in any upper division philosophy courses.
2. Eight upper division courses including five selected from the following: Symbolic Logic (130), Seminar in Classical Philosophy (131), Seminar in Medieval Philosophy (132), Seminar in Modern Philosophy (133), Seminar in Metaphysics (135), Seminar in Theory of Knowledge (136), Seminar in Ethical Theory (137)

Introductory Level Courses

General Introduction

4. Introduction to Philosophy

An introduction to philosophy through a consideration of the problems raised in at least three major areas: ethics, metaphysics, and epistemology. Recommended as a beginning course in philosophy.

5. Ethical Issues in Society

A formal inquiry into normative ethics with special attention to general ethical principles and to the practical application of these principles to current ethical issues in society. Topics may include the concepts of freedom, obligation, value, rights, justice, virtue, and moral responsibility, as applied to issues like abortion, punishment, economic distribution, racial and sexual discrimination, sexuality, political obligation, nuclear war, and pornography. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

6. Ethical Issues in Business

A formal inquiry into normative ethics with special attention to general ethical principles and the application of these principles to current moral issues in business. Topics may include truth in advertising, corporate

social responsibility, affirmative action, capitalism, government regulation, quality of work-life, environmental and resource issues, and ethical codes of conduct. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

7. *Ethical Issues in Medicine*

A formal inquiry into normative ethics with special attention to general ethical principles and the application of these principles to current moral issues in medicine and the health sciences. Topics may include the definition of death, informed consent, distribution of health care, euthanasia, genetic manipulation, artificial conception, prolongation of life, and organ transplants. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

The Western Culture Sequence

11. *Classical and Medieval Philosophy*

The beginnings of Western philosophy studied in representative writers of the Greek and medieval traditions, with attention to their historical and literary milieu and to their relevance to contemporary thought. Course satisfying the Western Culture sequence requirement for the Bachelor's Degree in all undergraduate colleges.

12. *Early Modern Philosophy*

Study of the principal fashioners of the modern mind: philosophers mainly of the seventeenth and eighteenth centuries, studied in the historical and literary context of their times and in their impact on our own. Course satisying the Western Culture sequence requirement for the Bachelor's Degree in all undergraduate colleges.

13. *Modern and Contemporary Philosophy*

Introduction to the closer roots of modern thinking, from the critical revolution of Kant to some of the dominant currents of the twentieth century. Course satisfying the Western Culture sequence requirement for the Bachelor's Degree in all undergraduate colleges.

Courses for Special Interests

25. *Logic*

An introduction to the art of logical reasoning. Emphasis is placed on the ability to recognize common fallacies of argumentation.

28. *Freedom and Time*

Philosophic exploration of whether and in what sense we are free in our decisions, not simply determined by conditioning and environment. This problem is seen to hinge on one's understanding of the nature of time.

29. *Philosophical Topics in Literature and Film*

An investigation of selected films and literary works as sources of insight into a variety of philosophical issues. Topics considered may include the limits of human rationality, absurdity, human suffering, the nature of reality, freedom and determinism. Readings from traditional and contemporary philosophical sources.

31. *Christian Philosophy*

A study of the interface of Christianity and philosophy by a consideration of topics of interest to both Theology and Philosophy in their respective understandings of human experience.

32. *Politics and Society*

An introduction to political and social philosophy through an examination of traditional and contemporary views.

Intermediate Level Courses

(Normal prerequisite: at least one course in Introductory Level.)

105. God and Philosophy

Philosophical inquiry, based on both classical and contemporary views, as to whether the existence of God can be rationally demonstrated, whether it is compatible with evil, and how human beings relate to God.

108. Philosophy of Language

A survey of recent philosophical work on the nature of language and its relation to the rest of the world. The course investigates semantics, presuppositions of linguistic theory, and the nature of metaphor relationships between formal and ordinary language.

109. Philosophy and the Sexes§

A philosophical examination of theories of sex differences and relationships between the sexes in the past, the present, and in possible futures. Readings may include selections from traditional as well as contemporary sources.

110. Ethics in the Health Professions

A formal inquiry into applied ethics emphasizing the moral issues encountered by members of the health professions. Topics may include the formulation of professional ethical standards and the examination of moral dilemmas in medicine, psychological counseling, and other areas of health care. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

111. Ethics in Journalism

A formal inquiry into applied ethics emphasizing the moral issues encountered by journalists. Topics may include the formulation of professional ethical standards, confidentiality, privacy, violence in the news, bias, commercial pressures, censorship, equal access, and the depiction of minorities and women. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

112. Ethics in Management

A formal inquiry into applied ethics emphasizing the moral issues encountered by managers. Topics may include the role of ethical principles in business and the ethical dilemmas raised by the management and administration of business organizations such as conflicts of interest, organizational politics, commercial bribery, whistleblowing, labor-management conflicts, and consumerism. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

113. Ethics in the Law

A formal inquiry into applied ethics emphasizing important moral issues in the formation and the practice of law. Topics may include the relationship between legal and moral obligation, moral principles underlying the law, and the nature of legal reasoning. Course satisfying the Ethics requirement for the Bachelor's Degree in all undergraduate colleges.

120. Kant

A study of Kant's *Critique of Pure Reason. Special prerequisite: Philosophy 12.*

125. Marx

A study of Karl Marx's philosophic thought.

126. Existentialism

A general introduction to Existentialism in its analysis of the basic structures of human existence, particularly freedom, and in its major thinkers. *Special prerequisite: Philosophy 12, or permission of the instructor.*

130. Symbolic Logic

An introduction to symbolic logic. Topics will include truth functional, syllogistic, and quantificational logic.

131. Seminar in Classical Philosophy

Intensive study of one major figure from the ancient period, normally Plato or Aristotle. *Prerequisite: Philosophy 11.*

§ Course included in Women's Studies Program

132. Seminar in Medieval Philosophy

Intensive study of one major figure from the medieval period, normally Augustine or Aquinas. *Prerequisite: Philosophy 11.*

133. Seminar in Modern Philosophy

Intensive study of one major figure from the modern period, normally Hume or Kant. *Prerequisite: Philosophy 12.*

135. Seminar in Metaphysics

Advanced analysis of problems in metaphysics. Readings and discussion. *Special prerequisites: Philosophy 11 and 25.*

136. Seminar in Theory of Knowledge

Advanced analysis of problems in the theory of knowledge. Readings and discussion. *Special prerequisites: Philosophy 12 and 25.*

137. Seminar in Ethical Theory

Advanced analysis of problems in moral and social philosophy. Readings and discussion. *Special prerequisite: Philosophy 25.*

140. Philosophy of Science

Exploration of the philosophical presuppositions involved in the methods of modern science, particularly physics; of the structure and development of theories; and of the relation of scientific knowing to other modes of knowing. *Prerequisite: two courses in science or mathematics, or one course with laboratory. No philosophy prerequisite.*

141. Philosophy of Social Science

Current topics in the philosophy of the social sciences (e.g., foundations, role of values). No philosophy prerequisite.

142. Philosophy of Law

A study of the proper limits and uses of the criminal law in regulating human behavior. No philosophy prerequisite.

143. Political Philosophy

A critical examination of important political theories and concepts (e.g., liberty, equality, justice, and rights).

144. Philosophy in the Literary Arts

An inquiry into philosophical aspects of the literary arts, including a consideration of the philosophical significance of certain features present in literature, such as figurative language, literary time, and truth in works of fiction. Traditional as well as contemporary sources.

145. Aesthetics

A philosophical examination of the historical development of the concepts of taste and beauty from ancient times to the present.

146. The Arts and Philosophy

A study of philosophic issues concerning the fine arts and art criticism. Among topics to be discussed may be the nature of art, artistic freedom and censorship, evaluation of art.

149. Selected Problems

Philosophical analysis of selected challenging problems; readings and discussions. *Prerequisites, if any, to be announced.*

Advanced Level Courses

(Normal prerequisites: two courses in Intermediate Level.)

164. Hegel

A study of Hegel's thought in the context of its historical antecedents and consequences. *Prerequisite: Philosophy 120*

167. Analytic Philosophy

A study of the methods and presuppositions of analytic philosophy. *Special prerequisite: Philosophy 26.*

170. Contemporary European Philosophy

An investigation of selected topics from twentieth-century European philosophy: movements such as phenomenology and structuralism; philosophers such as Husserl, Heidegger, Merleau-Ponty, Sartre.

175. Philosophy of Mind

Investigation of the logical structure of psychological concepts, such as those of sensations, images, beliefs, thoughts, intentions, expectations.

190. Advanced Topics in Philosophy

Selected philosophical problems studied at an advanced level.

197. Senior Seminar

Senior philosophy majors select an instructor from the philosophy faculty, and, together, decide on a text or topic for study. The responsibility for the seminar is shared among the student and faculty participants. By arrangement during previous term.

198. Senior Research Thesis

Creation of a carefully researched and scholarly paper, under the active direction of a selected member of the department's staff. Of particular value to senior students who intend to pursue graduate studies.

199. Directed Research

Tutorial work, with demanding requirements, for advanced students in particular problem areas not otherwise accessible through courses. By previous arrangement only, with the Instructor, Department Chair, and Dean.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS

Professors: William A. Barker II, John B. Drahmann, William T. Duffy, Jr., *Chair,* Carl H. Hayn, S.J., Philip T. McCormick
Assistant Professor: David B. Fenner

The Department of Physics offers major programs of lecture and laboratory instruction leading to the B.S. degree in *physics* and the B.S. degree in *engineering physics*. The department also provides required and elective courses for students majoring in other fields.

The *physics* major usually aims at one of three goals: graduate study in physics or related fields, professional employment by industry or government, or secondary school teaching in physical science. The undergraduate major program in physics is appropriate preparation for graduate study in the fields of physics, astronomy and astrophysics, biophysics, environmental science, geological science and geophysics, medical physics and medicine, patent law, physical science teaching, and oceanography.

The *engineering physics* major, particularly appropriate for the applied science student who wishes to do research and development, covers a broad spectrum of courses in mathematics, engineering, and physics. In view of today's rapidly changing technology, the assignments of young engineers or physicists employed by industry will likely involve new technologies that they haven't previously assimilated. This program emphasizes, to a greater extent than the traditional engineering major, the physics fundamentals which are applicable to the new technologies as well as to the more established ones.

Requirements for the Bachelor of Science in Physics

The *physics* major must fulfill the University and College requirements, in addition to the departmental requirements listed below.

1. Chemistry 1 and 2; Engineering 3
2. Mathematics 11, 12, 13, 21, 22, and 53
3. The introductory physics sequence: Physics 4, 5, 6, and 7
4. A series of intermediate-level courses in the subject areas of electronics, classical mechanics, electromagnetism, thermal physics, and quantum physics. The usual major program will therefore include Physics 70, 101, 102, 111, 112, 120, 121, 122, and 170.
5. For graduate study in physics or related fields, additional elective physics and mathematics courses.
6. A special curriculum for students preparing for careers in biophysics, medical physics, or medicine. Consult the publication *Information for Physics and Engineering Physics Majors.*
7. For students with broad interests crossing into other disciplines, a strong minor emphasis in such fields as biology, chemistry, computer science, electrical engineering, mathematics, or philosophy. Specialized curricula should be developed in consultation with the student's departmental faculty adviser.

Additional details about careers and curricula are available in the publication *Information for Physics and Engineering Physics Majors.*

Requirements for the Bachelor of Science in Engineering Physics

The *engineering physics* major must fulfill the University and College requirements, with the modification that this major requires 45 term courses (180 units) in an approved curriculum. Curricula are approved by the Engineering Physics Committee consisting of Professor Duffy (Physics), Professor Saad (Mechanical Engineering), and Professor Yarbrough (Electrical Engineering and Computer Science). The departmental requirements are listed below.

1. Chemistry 5 and 6; Mathematics 11, 12, 13, 21, and 53; Applied Mathematics 106
2. Physics 4, 5, 6, 7, 70, 170, 101, 102, 111, and 112
3. Engineering 3, 10, 43, 120, and 121; EECS 111 and 131
4. Elective courses in engineering and/or science directed toward a Special Emphasis area (3-5 term courses)
   Example: Solid State Science Emphasis
   - Physics 113 (Optics)
   - Physics 116 (Physics of Solids)
   - Physics 121 (Quantum Physics I)
   - Physics 125 (Quantum Mechanics)

Other Special Emphasis areas are (1) Electronics, (2) Systems and Networks, (3) Optics, (4) Energy Sources and Thermodynamics, and (5) Nuclear Science.

5. Free Electives (3-4 term courses)

Additional details about careers and curricula are available in the publication *Information for Physics and Engineering Physics Majors.*

Honors Progam and Research Participation

Freshman applicants planning to major in physics or engineering physics may also consider separate application for admission to the Honors Program. Among other benefits, honors students are admitted to special honors sections of certain courses offered by the Departments of Economics, English, History, Mathematics, Philosophy, and Religious Studies.

Undergraduate research participation and independent study opportunities are available under the direction of the physics faculty. Research in the department is currently funded by NASA, Research Corporation, and National Science Foundation. Course credit for undergraduate research participation is available under Physics 198; course credit is provided for independent study under Physics 199.

1. Great Ideas of Physics

A nonmathematical course intended to acquaint students of the humanities and social sciences with physics as a human activity. Emphasis is placed on the concepts of Galileo, Newton, Einstein, and Heisenberg and the impact of their ideas on the general culture of the twentieth century. Not open to physical science or engineering majors. No laboratory. Fall term. Offered alternate years. Offered 1984.

3. Introduction to Astronomy

Descriptive study of the solar system. Stellar astronomy and evolution. The galaxy. The universe. Observational methods. Normally offered each term.

4. Physics for Scientists and Engineers I

Measurement, Vectors. Straight-line kinematics. Kinematics in two dimensions. The laws of inertia, mass conservation, and momentum conservation. Center-of-mass and reference frames. Force. Newtonian mechanics and its applications. Work and kinetic energy. Potential energy and energy conservation. Laboratory. *Prerequisites: Mathematics 11 and 12. (Mathematics 12 may be taken concurrently.)* Spring term.

5. Physics for Scientists and Engineers II

Rotational dynamics. Gravitation. Kepler's laws. Simple harmonic motion. Electrostatics. Gauss's law. Potential. Capacitance. Electric current. D-C circuits. Kirchhoff's rules. Magnetic forces and field. Laboratory. *Prerequisites: Physics 4 and Mathematics 13. (Mathematics13 may be taken concurrently.)* Fall term.

6. Physics for Scientists and Engineers III

Electromagnetic induction. A-C circuits. Waves. Geometrical optics. Interference, diffraction, and polarization. Thermal properties and kinetic theory of gases. Thermodynamics. Laboratory. *Prerequisite: Physics 5.* Winter term.

7. Physics for Scientists and Engineers IV

Elementary modern physics. Special relativity. Quantum effects. Hydrogen atom. Many-electron atoms. X-rays. Nuclear structure. Nuclear reactions. Molecular and solid-state physics. Laboratory. *Prerequisite: Physics 6.* Spring term.

51. Introduction to Earth Science

An overview of geology and its significance to man. Earthquakes, volcanism, plate-tectonics and continental drift, rocks and minerals, geologic hazards, mineral resources. Course emphasis will be directed toward basic geologic principles and the role of geology in the world today. Winter term.

70. Electronic Circuits for Scientists I

Linear electric circuits. Phasor analysis, transients and Fourier series. Network theorems. Junction diodes, bipolar junction transistors and field-effect transistors. Voltage amplifiers. Laboratory. *Prerequisite: Physics 6.* Spring term.

101. Analytical Mechanics I

Scalars, vectors, and tensors. Orthogonal coordinate systems. Particle kinematics. Particle motion under a velocity-dependent force. Particle motion under a position-dependent force. Motion of charged particles in electric and magnetic fields. The undamped simple harmonic oscillator. The vibrating string. Conservation laws. The two-body problem. Rigid bodies in static equilibrium. Rotating coordinate systems. The inertia tensor. Euler's equations of motion for rigid bodies. *Prerequisite: Physics 4.* Fall term.

102. Analytical Mechanics II

The strain tensor. Dynamics of elastic bodies. Elastic properties of crystals. Static solutions. First integrals of the Euler Equation. Viscous flows. Scaling relations. Hydrodynamic and hydromagnetic waves. Vorticity. Turbulence. The Euler Equation. Generalization for several variables. The inclusion of auxiliary conditions. Hamilton's Principle. Generalized coordinates. Lagrange multipliers and the forces of constraint. Conservation of energy. Hamilton's equations. *Prerequisite: Physics 101 or Engineering 42.* Winter term.

104. General Physics I

The nucleus and radioactivity. Newtonian laws of motion. Gravitational force. Linear and angular momenta. Collisions. Work and energy. Special relativity. Fluid statics. Wave phenomena. Vibrating systems. Sound. Resonance. Doppler effect. Laboratory. Fall term.

105. General Physics II

Electrostatics. Ohm's law. Electric potential and circuits. Power and energy. Electromagnetic induction. Alternating voltages and circuits. Electronics. Geometric and physical optics. Quantum phenomena. Energy levels. Semiconductors. Ideal gases and kinetic theory. Temperature. Thermal expansion. Heat transfer. Phase diagram. Laboratory. *Prerequisite: Physics 104.* Winter term.

111. Electromagnetic Theory I

Electrostatic fields. Laplace's and Poisson's equations. Dielectrics. Magnetic fields of steady currents. Induced electromotive forces. Magnetic energy. Magnetic materials. *Prerequisite: Physics 6.* Winter term.

112. Electromagnetic Theory II

Maxwell's equations. Plane waves in free space and in matter. Reflection and refraction. Interference and diffraction. Polarization. Guided waves. Radiation of electromagnetic waves. *Prerequisite: Physics 111.* Spring term.

113. Optics

Geometrical optics. Interference. Fraunhofer and Fresnel diffraction. Optical instruments. Polarization. Crystal optics. Selected topics from contemporary optics. *Prerequisite: Physics 6.* Winter term. Offered alternate years. Not offered 1985.

116. Physics of Solids

Crystal structure. Phonons. Free electron theory of metals. Band theory of solids. Magnetism. Superconductivity. *Prerequisite: Physics 7 and senior standing.* Spring term.

120. Thermal Physics

The laws of thermodynamics with applications to ideal and non-ideal systems. Elementary kinetic theory of gases. Entropy. Classical and quantum statistical mechanics. Selected topics from magnetism and low temperature physics. *Prerequisite: Physics 7.* Winter term. Offered alternate years. Offered 1985.

121. Quantum Physics I

Thermal radiation. Wave-particle duality. Bohr atom. Schroedinger wave mechanics. One-electron atoms. Atomic moments, spin, and transitions. Multielectron atoms. Hartree theory. Optical excitations. Zeeman effect. Laboratory. *Prerequisite: Physics 102.* Fall term.

122. Quantum Physics II

Molecules, bonding and spectra. Quantum statistics and applications. Nuclear models and structure. Nuclear decay and reactions. Elementary particles and quark theory. Strong and weak nuclear forces. Laboratory. *Prerequisite: Physics 121.* Winter term.

125. Quantum Mechanics

Wave packets and the uncertainty relations. The Schroedinger wave equation. Eigenfunctions and eigenvalues. One-dimensional potentials. The Schroedinger equation in three dimensions. Angular momentum. The radial equation. The hydrogen atom. *Prerequisite: Physics 101.* Spring term.

131. Methods of Mathematical Physics I

Matrices and vector spaces. Function space. Fourier analysis and orthonormal sets of function-vectors. Functions of a complex variable. *Prerequisite: Mathematics 102.* Fall term. NCX*

132. Methods of Mathematical Physics II

Ordinary differential equations. Boundary conditions and eigenfunctions. The Green's function. *Prerequisite: Physics 131.* Winter term. NCX*

170. Electronic Circuits for Scientists II

Voltage and power amplifiers. Logic gates and digital circuits. Feedback and waveform generation. Operational amplifiers and analog circuits. Laboratory. *Prerequisite: Physics 70.* Fall term.

198. Undergraduate Physics Research

Departmental work under close professorial direction on research in progress. Permission of the professor directing the research must be secured before registering for this course. Restricted to physics majors, engineering physics majors, and honors students with a 3.00 or better grade point average. Fall, winter and spring terms.

199. Directed Reading in Physics

Detailed investigation of some area or topic in physics, which is not covered in the regular courses, supervised by a faculty member. Permission of the professor directing the study must be secured before registering for this course. Restricted to physics majors, engineering physics majors, and honors students with a 3.0 or better grade point average. Fall, winter and spring terms.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF POLITICAL SCIENCE

Professor Emeritus: Richard J. Roberts, S.J. *Chair*
Associate Professors: Eric O. Hanson, William J. Stover
Assistant Professors: Janet A. Flammang, Dennis R. Gordon, Timothy J. Lukes

The Department of Political Science introduces students to the political aspects of society and the analysis of political behavior, values, institutions, and government. It also offers preparation for various graduate and professional studies and careers in public service. Special emphasis programs are available to Political Science majors in Ethnic Studies, International Relations, Political Economy, Pre-Law, Public Administration, and Television Communications and Public Affairs.

In addition to the general University and College requirements (see page 24), a student majoring in Political Science must satisfactorily complete the following requirements.

1. Two mathematics courses, selected from one of the following:

* Exempted from challenge

a. Mathematics 6 and 7
b. Mathematics 11 and 12
c. Mathematics 6 and 8 (Statistics)
d. Mathematics 11 and 8 (Statistics)

Other statistics courses may replace Mathematics 8 (Statistics).

2. Eleven term courses in Political Science:
   a. Political Science 1, 2, 25, 30 (taken during the freshman and sophomore years, preferably in sequence)
   b. Seven upper division courses in Political Science. Of these seven courses, there must be at least one lecture course from each of these four areas of Political Science:
      American Politics
      Comparative Politics
      International Relations
      Political Theory and Methodology

3. Among the seven upper division courses, a Political Science seminar, taken during the senior year

4. An average grade of C in Political Science courses

Special Programs

Political Science majors may select one of several emphasis programs. These are not narrow specializations, but aim at a particular competence within the major program. The completion of a special emphasis program may be noted on a student's transcript if the student notifies the Department Chair and the Chair approves the notation. Detailed programs of study listing recommended courses for each emphasis may be obtained from the Department Chair.

Ethnic Studies Emphasis

An emphasis program concentrating on the multicultural character of American society and politics, and providing an interdisciplinary approach to issues of racial and ethnic justice.

International Relations Emphasis

An emphasis program enabling Political Science majors to acquire special competence in the study of international relations, international law and organization, economic interdependence, diplomacy, political geography, and, where possible, foreign language and culture.

Political Economy Emphasis

An emphasis program offered with the Department of Economics emphasizing the interdependence of Economics and Political Science in the analysis and solution of current domestic and world problems.

Pre-Law Emphasis

An emphasis program available to those Political Science majors considering graduate study in law school and legal careers.

Public Administration Emphasis

An emphasis program combining Political Science with a program of courses dealing with enforcement of public policy, available to those majors planning careers in public service or business.

Television Communication and Public Affairs Emphasis

An emphasis program linking political analysis with broadcast journalism and allowing the Political Science major to communicate political ideas, events, and personalities through the medium of television.

Honors Program

The Honors Program provides well-qualified students with special opportunities for training and research in political science through seminars, tutorials, and research projects.

Application for admission to the Honors Program normally should be made in the sophomore year. Applicants must have achieved a 3.50 average or better in all University work, and a 3.70 average or better in political science.

Honors candidates will complete all requirements for a major in political science and will also submit a research project during their senior year. Graduation with Honors in Political Science will require (1) a 3.50 average or better in all University work (2) a 3.70 average or better in political science (3) the submission of an acceptable research project and (4) completion of such courses as the Honors Committee may designate. Interested students should consult the Chair.

External Programs

The Political Science Department makes available to qualifying students opportunities to participate in a variety of programs that combine practical field experience and academic credit. These include

1. Internships in government agencies, legislative bodies, political parties, or politically related groups
2. Multidisciplinary programs in Washington, D.C. (through American University) and at the United Nations (through Drew University)

A Model United Nations program is sponsored by the Political Science Department with participation open to all undergraduate students. Students in the Model U.N. may elect to take Political Science 121 for two units of credit.

Lower Division Courses

1. Introduction to American Politics

This critical analysis of American political values, institutions, and processes includes topics on America's political tradition, the Constitution, the presidency, Congress, bureaucracy, Supreme Court, elections, political parties, interest groups, mass media, domestic policies, and foreign policy.

2. Introduction to Comparative Politics

The study of government and politics in several modern states emphasizes the development of analytical abilities and critical skills in the evaluation of political culture, processes, and institutions.

25. Introduction to International Relations

This survey deals with conceptual models used to analyze international relations, contemporary problems of world politics, and the methods states use to provide peace and security.

*25.77. Honors Seminar in International Relations NCX**

From time to time "HONORS" sections may be offered in selected courses. These are designated .77 after the course number.

30. Introduction to Political Theory

Introducing some of the principal themes and questions of political theory, this course uses both classical and contemporary sources. It will explore a variety of political questions to show political theory at work, examining how theorists have understood the questions of freedom, obligation, domination, the prospects for justice, racism, and political action.

40. Social Forces in Politics†

The impact of social movements on political change directs attention to the goals and means of women and minority movements as well as the political aspects of changing life styles.

45. Criminal Justice System

A basic understanding of the criminal justice system in the United States: police, courts, probation, imprisonment, parole, relations with other governmental agencies. Goals, successes and failures of the system, and possible remedies.

90. Selected Studies in Public Policy

An introduction to the formulation and implementation of selected public policies in comparative nations. Includes topics dealing with foreign relations, national security and other policies.

Upper Division Courses

Prerequisites for all upper division courses:

1. For A. *Political Theory and Methodology* courses, 30 is required.
2. For B. *International Relations* courses, 25 is required.
3. For C. Comparative Politics courses, 2 is required.
4. For D. *American Politics* courses, 1 is required.
5. For E. *Senior Course Work,* at least one upper divison lecture course in the area (A,B,C,D) of the seminar, practicum, or reading, is required. (In special cases, the Instructor of a particular course may make an exception to these requirements.)

* Exempted from challenge † Course included in Ethnics Studies Program

A. Political Theory and Methodology

102. Political Ideology

A study of conflicting critiques of contemporary issues using different political topics—ecology, urban living, democratic movements, racial and ethnic relations, domination and liberation, the role of violence—to explore contrasting theoretical understandings of those issues. The course examines the differences among liberalism, socialist theory, conservative, and anarchist thought.

103. Approaches to the Study of Politics

A theoretical examination of different approaches to the study of politics, the course explores competing theories, paradigms and types of evidence in the social sciences and presents representative methodologies for political research.

106. Political Conservatism and Industrial Society

The forms of conservatism: temperamental, possessive, practical, philosophical. Their bearing on political conservatism. Major conservative thinkers.

108. Catholic Political and Social Thought

Survey of Catholic theories of church-state relations in history and at present. Catholic thought on state authority, forms of government, and purposes of society and the state. Evaluation of socialism, capitalism, and liberalism, from the Catholic viewpoint of nature and destiny of the human person.

111. History of Political Theory I—from the Greeks to the Renaissance

This course examines the development of Western political thought from its Greek origins in the work of Thucydides, Plato, and Aristotle, through the Roman contribution, to the Christian encounter with classical themes in the work of Augustine and Aquinas.

112. History of Political Theory II—from the Renaissance Through Marx

This course continues the examination of Western political thought from the departure of Machiavelli, through the origins of liberalism in the writings of Hobbes and Locke, to the critical theories of Rousseau and Marx.

113. History of Political Theory III

Contemporary writers and themes in nineteenth- and twentieth-century political thought, including the work of Tocqueville, Nietzsche, Weber, Freud, the existentialists, and later critical Marxists.

117. American Political Theory I—the Puritan Founding to the Civil War

This course examines the development of American political thought from the Puritan period through the reconstruction of the American political and social order following the Civil War. The course explores the conceptions of freedom, private self, and public order, in the context of the racial, social and economic development in the American Republic.

118. American Political Theory II—the Civil War to the Present

An exploration of the development of American political conceptions from the late 19th century to the present. The course focuses on questions of social order, the role of the State, violence and social reform, racial and industrial justice, and the future of politics in an industrial and urban society.

B. International Relations

121. International Organization Laboratory

In this course, students simulate U.N. operations, representing member nations, debating and preparing resolutions, and engaging in other aspects of diplomacy. *Prerequisite: one lower division course in Political Science or History.* Open to all undergraduates. Students participating in the Model U.N. are encouraged to take this

course. May be taken for credit only once. (2 units).

125. International Law

A study of the sources, nature and functions of international law in world politics, the course devotes special attention to the subjects of international law, international transactions and the rules of war. Viewpoints are presented from Western, socialist, and Third World perspectives.

126. International Organization

This examination of international organization in world affairs considers the political, economic, and social role of the United Nations, regional organizations, specialized agencies, and nonstate transnational actors.

127. Comparative Foreign Policies

A comparative study of the foreign policies of selected nation-states, the course examines the interaction of international and domestic politics in foreign policy formulation and implementation.

128. American Foreign Policy

This course explores the aims, formulation, and implementation of U.S. foreign policy since World War II, especially toward the Soviet Union, Europe, China, and selected less developed countries.

129. Soviet Foreign Policy

An analysis of Soviet foreign policy, the communist world and the international political system, the course examines the impact of ideology on relations with United States, China, and the developing nations.

135. Far Eastern International Relations

This course treats international political developments in the Far East from 1900 to the present. Included are analyses of the geographic environment, political forces, and the impact of differing cultures on the governmental decision making process. *Prerequisites: Political Science 2 and 25.*

C. Comparative Politics

136. Politics in Central America and the Caribbean

This course examines the political cultures, processes, and institutions of Mexico and selected Central American and Caribbean states. Topics include governmental organization, dependency, development, and political violence.

137. Politics in South America

An examination of the political cultures, processes, and institutions of selected South American nations, the course includes topics on government, dependency, development, and political violence.

139. Politics and Religion in East and West

This inquiry into the relationship between religion and politics in selected cultures emphasizes traditional East Asia, modern Italy, and the contemporary United States.

140. Politics in Less Developed Countries

This multidisciplinary study deals with the problems and politics of political development in Latin America, Africa, and/or Asia. Case studies of the communist and capitalist approaches to political development are included as well as the impact of international politics on internal development.

141. Political Leadership

Political leadership includes concerns of personality, role, organization, task, values, and setting. Explanations of motivation and behavior in political leadership are sought in elite analysis, belief systems, statecraft, personality theory, charismatic effects, psychobiography, and medical histories.

144. Politics in Western Europe

This analysis of the nature, structure, and utilization of political power in Great Britain and continental Europe treats institutional, ideological, cultural, and economic aspects of politics. Emphasis is on problems

of political stability, regional integration, and social change.

145. Soviet Politics

An analysis of the Soviet political system and its ideological premises, the course examines the origin and development of the Soviet party-state and its processes of government and politics.

147. Politics in Japan

Included are the political history, institutions, and interest groups of modern Japanese political culture.

148. Politics in China

The course examines the origins of revolution in modern China, the politics of social and economic modernization in China since 1949, the problems of bureaucratization and political participation, and the succession to Mao Zedong (Mao Tse-tung).

149. Comparative Political Systems

This comparative study of selected public policies in economically advanced societies includes the relationship of political culture to social and economic behavior.

D. American Politics

150. The Presidency

The course analyzes the presidency as it has evolved throughout the course of American history and compares presidential powers with those of Congress, the courts, the bureaucracy, the press, political parties, and the public.

151. The Congress

The course examines the history, structure, and policies of Congress, including congressional elections and theories of representation, the committee system and congressional norms, lobbying, congressional ethics and reforms, and the power of Congress relative to the President and the bureaucracy.

152. Political Participation

An examination of who participates in American politics and the various forms of political participation, the course includes elections, political parties, interest groups, community organizing, and political protest.

153. Ethnic Politics†

This course examines the political culture and social reality of the ethnic/racial groups in the United States. Included in this examination of the relationship of minorities to the social, political, and economic structure are interpretations of American ethnic/race relationships, the extent and nature of ethnic power within the American political-economic structure, the effect of the policy process and social programs on ethnic minorities, and minority political movements and organizations. Focus of the course is the experience of Chicanos, Blacks, Native Americans and Asian Americans.

154. Women and Politics§

An analysis of American women's political consciousness and activity, including alternative theoretical formulations of women's power; the history of American feminism; the question of race, sex, and class divisions in America, and women in crosscultural perspective.

155. Political Economy

This course is an introduction to the relationship of the state to the private market distribution of resources and the achievement of individual and aggregate economic goals. Of particular interest are the classical ideas of political economy, the functioning of capitalist and socialist political-economic systems, the role of the state and multinationals in the world and domestic economy, domestic fiscal and monetary policy, and the phenomena of imperialism and corporate power.

156. Politics and Mass Media

A study of the impact of mass media on political values, attitudes, and behavior, the course examines various forms of mass communication including print, grapic art, and film, with special attention devoted to television.

† Course included in Ethnics Studies Program § Course included in Women's Studies Program

157. U.S. Constitutional Development I

An historical treatment spanning 1607–1890. Topics include English and colonial constitutional heritage, the U.S. Constitution, landmark cases interpreting the Constitution, the nature of the Union, slavery, the Civil War, and the rise of judicial restraints on legislative economic regulation. (157 and 158 are taught in alternate years).

158. Constitutional Development II

An historical survey from 1890 to the present, including 1900s judicial restraint on economic regulation, the Constitution in two world wars, judicial approval of the New Deal, and the Court's modern protection of civil liberties. Political Science 158 may be taken before 157.

159. Current Constitutional Law I

This course treats the present constitutional law of the seven Articles of the original Constitution, the organization and powers of Congress, the presidency, the Courts, interstate relationships, and the amending process. Instruction in use of legal research sources. (159 and 160 are taught in alternate years.)

160. Current Constitutional Law II

This course treats the present constitutional law of the 26 amendments to the Constitution, dealing chiefly with the rights of free speech, free press, freedom of religion, no establishment of religion, criminal justice, voting rights, due process of law protecting life, liberty, and property, and equality before the law. Instruction in use of legal research sources. Political Science 160 may be taken before 159.

162. Urban Politics

An exploration of the political life of the American city, this course pays special attention to the structures and institutions of urban political power, the historical development of urban social life and politics, urban political cultures, the changing forms of urban political action, ethnic and class communities, the political economy of the contemporary city, and the future of urban planning.

163. State and Metropolitan Politics

This course surveys the development of state constitutions, federal-state relations, politics and elections, the legislative process, the courts, and county government, as well as the organization and current major problems of state administrative systems.

165. Public Administration

An examination of the administration of public policies is cast in terms of broad questions of democratic theory. Specific topics include organizational theory, public employees, budget-making, policy evaluation, and public finance.

166. Special Topics in Public Administration

This course will focus on varying public administration topics, often making use of experts outside the University. Topics include public sector labor relations, public budgeting and finance, administration of county and city government, and public personnel policies.

167. The Making of Public Policy

The processes of government relative to economic and social programs, examining resource allocation, distribution of benefits and burdens, and control. Consideration is given to political choices among alternative policies in energy use, incomes policy, educational resources, health needs and costs, housing and transportation, the means of policy formation, the planning process, and administrative programming.

E. Senior Course Work

183. Seminar in Comparative Politics

An examination of selected topics in comparative politics in various states and regions.

184. Seminar in American Politics

An examination of selected topics and problems in the American political process.

185. Seminar in American Politics

An examination of selected topics and problems in the American political process.

190. Seminar in Research Methods

The planning and conduct of political science research on selected topics such as political communication and socialization.

191. Seminar in Political Theory

An analysis of selected political philosophers or particular themes in political philosophy. The topics vary each year, and may include the work of Tocqueville, Marx, Plato, or medieval theory; recent theories of the state; theories of liberation and revolution; or the relationship of politics and poetics.

193. Seminar in World Revolutionary Forces

Theories of revolution which deal with the psychological, social and political aspects of change including studies of revolutionary movements and societies.

196. Seminar in International Relations

A consideration of selected aspects of international political behavior.

197. Seminar in Civil Liberties

Each student does an in-depth study in a particular civil liberty of his/her choice.

198.01, 198.02, 198.03. Practica in Public Affairs

Directed internships in government agencies, legislative bodies, political parties, or interest groups are open to qualified juniors or seniors with permission of the Instructor.

199. Directed Reading Course

Independent study provides opportunities for students who wish to do intensive work in areas not fully covered in upper division courses. Written outlines of the proposed topics and previous consent of the Instructor, Department Chair, and Dean of the College are required.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF PSYCHOLOGY

Professors: Marvin L. Schroth, *Chair,* Eleanor W. Willemsen
Associate Professors: Roland C. Lowe, Robert Numan
Assistant Professors: Katherine Conway, Jerry M. Burger

Psychology is the study of behavior, emotion and thought by techniques modeled on the scientific method. On the undergraduate level, the study of psychology is part of a liberal education; a major in psychology lays the ground work for advanced studies of many different kinds, including the pursuit of the doctoral degree needed for the professional practice of psychology. The department offers introductory courses, courses in each major area of the discipline, and laboratory courses in psychological methods.

Requirements for Major

Students majoring in Psychology must fulfill the University and College requirements and they must satisfactorily complete the following courses:

Lower Division Courses in Psychology:

1. Psychology 10 and 11

Lower Division Courses Outside of Psychology:

1. Mathematics 6 and 7 or 11 and 12; Mathematics 8
2. Biology 9

Upper Division Courses in Psychology

1. Psychology 110 or 111
2. Seven additional upper division psychology courses to include
   a. Two courses related to Psychology 10 (Psychology as a Natural Science) from among 112, 120, 130, and 165
   b. Two coursees related to Psychology 11 (Psychology as a Social Science) from among 115, 150, 160, and 185
3. Three additional elective upper division Psychology courses

Special Programs

Emphasis in Special Education or Teaching

Psychology majors who wish to go into special education or elementary teaching must satisfy the Bachelor of Science and departmental requirements, and complete a Liberal Studies program in accordance with current state requirements. Interested students must submit a formal proposal to the Department Chair prior to or early in the junior year.

Psychology majors who plan to teach social science (Psychology, Sociology, Political Science, Economics) at the high school level must complete the Bachelor of Science and departmental requirements, and follow a special "waiver" program. They should consult with the Department Chair as early as possible.

Emphasis in Psychobiology

In addition to the Bachelor of Science and departmental requirements, students who wish to study neuroscience may elect the Psychobiology concentration. The following list of requirements incorporates the Psychology major.

1. Mathematics 8 and 12
2. Chemistry 1, 2, 35, and 36
3. Biology 30, 32, 34, 101, 110, 115, 124, and 171
4. Psychology 10, 11, 70, 110, 112, 130, 165, 190, and Two courses from the following: 115, 150, 160, 185, and 195

Emphasis in Gerontology

Students who wish to study the elderly may select this emphasis. In addition to the Bachelor of Science and departmental requirements, they must take Biology of Aging, a Practicum in Aging, and at least three courses selected from the following: Anthropology 172, Political Science 149, Psychology 188, Psychology 196, and Sociology 172.

Emphasis in Professional Psychology (Honors)

The Department of Psychology provides a special program for students demonstrating exceptional scholastic promise and the desire to continue with psychology in graduate school. For those students the department recommends the following courses.

1. Psychology 105, 110, 120, 170
2. Attendance at special departmental seminars
3. Participation in ongoing faculty research
4. An independent research project in the senior year
5. Related courses in other departments selected in consultation with the student's advisers

5.77. Honors Colloquium

Restricted to students in the University Honors Program. Major issues in psychology. Available only in alternate years.

10. Psychology as a Natural Science

The scientific study of human and animal behavior, especially sensation, perception, learning, motivation, and emotion. Emphasis placed on the physiological aspects of behavior.

11. Psychology as a Social Science

Principles of human development, intelligence, abilities, personality, psychological measurement, and sociopsychological influences on behavior. Introductory exposure to research methodology and statistical techniques.

36. Sex Roles and Psychology

This course is about the impact being male or female has on individual lives in relation to social institutions. Topics include sex differences, development of sex roles in childhood, theories about the origin of sex differences, and sex roles in the family, the business world, and the clinical world.

50. Psychology of Adjustment

An introduction to the psychology of personal and social adjustment. Personality patterns of the individual in various contexts, such as the family, the school, marriage, the adolescent years, and social relations. The relationship of sex roles to the individual.

70. Comparative Animal Behavior

Study of animal behavior from a naturalistic and empirical viewpoint. Through a survey of the literature dealing with ethology and comparative psychology, the course will stress the interaction between instinct (genetically determined fixed behavior patterns) and experience (learning) as determinants of animal behavior. Topics of interest include social behavior, animal communication, aggression, and the evolution of behavior. *Prerequisite: Psychology 10.*

80. Child Psychology

This course will survey development from birth to puberty. It is intended primarily for nonmajors and majors who will not be taking the Psychology 185, 186, 187 sequence. *Prerequisite: Psychology 10 or 11 recommended.*

90. Research Seminar for Beginners

Students with lower division standing who are participating in a research team led by a faculty member will meet together as a class to receive instructions in research design and execution and to carry out the team investigation. NCX*

105. Statistics and Experimental Design II

Advanced topics in theory and methods of statistical analysis and experimental design. Topics include complex analysis of variance, multiple correlation and regression, factor analysis, and an introduction to nonparametric statistics. *Prerequisite: Mathematics 8.*

* Exempted from challenge

110. Experimental Psychology

This course examines the basic principles and methods of experimental psychology. Although emphasis is placed on the experimental method, other methods (e.g., naturalistic observation) will be discussed. Analysis and application of group and single-subject experimental designs will be presented. The course will also survey the literature in learning, sensation, and perception. In the laboratory the student will apply lecture material toward the conduct of a number of experiments using human and animal subjects. Lectures and laboratory. *Prerequisites: Psychology 10 or 11 and Mathematics 8.*

111. Research Methods in Psychology

This course is a laboratory course in which psychological data are collected and the various means for obtaining the data (observation, attitude scaling, tests, performance on laboratory tasks, interviews, questionnaires, etc.) are studied. The content of laboratory exercises will be drawn from social, developmental, and personality psychology. The course will include issues pertaining to research design, measurement, data analysis, and reporting results. *Prerequisite: Psychology 10 or 11 and 95.*

112. Motivation and Emotions

The scientific study of the various motivational-emotional processes of man and higher animals. Topics include biological drives, psychological survival needs, altered states of consciousness, social motives, and theories of emotion. *Prerequisite: Psychology 10.*

115. Introduction to Abnormal Psychology

A comprehensive consideration of the major forms of mental disorder with regard to their etiology, nature, development, and therapy. Stress will be placed on current theories of mental dysfunction and the psychology of abnormal thinking. *Prerequisite: Psychology 10 or 11.*

117. Health Psychology

This course will address ways in which principles of psychology can be employed to help medical patients. It deals with the application of learning, cognitive and motivational principles to health care delivery, prevention of disease, and attainment of wellness. Available only in alternate years. *Prerequisite: Psychology 10 or 11 and 111.*

118. Advanced Topics in Clinical/ Abnormal Psychology

This course is designed for a small number of students who have taken 115 or 117 and who wish to pursue a specialized topic in depth. Topics might include disease prevention, modification of a health care delivery system, or education for a multicultural society. Permission of the instructor is necessary for enrollment. Available only occasionally.

120. Perception

An introduction to the study of research and theory concerned with how information from the sense organs is transformed into meaningful experiences. Topics include the development of perceptual processes, perceptual constancies, perceptual illusions, and information theory.

130. Psychology of Learning and Thought Processes

A survey of the experimental literature on the basic forms of the learning process from animals to mankind. The latest theories on memory and thought processes are included. *Prerequisite: Psychology 10.*

131. Cognitive Psychology

A survey of the "cognitive" movement in psychology, including different models of learning and memory and the implications of these models for developmental, clinical, and social psychology.

138. Exceptional Child

This course will focus on various psychological disorders in children including aggression, juvenile delinquency, psychotic behavior, learning disabilities, hyperactivity, mental subnormality, and psychophysiological disorders. In addition, various treatment approaches will be presented and the efficacy of these approaches evaluated. *Prerequisites: Psychology 10 or 11 and either 80, 185, 186 or 187.*

145. Clinical Assessment

Principles and problems of measurement in psychology, especially concerning to tests of attitudes, aptitudes, and personality. Students construct, administer, score, interpret, and evaluate tests. Interviewing and counseling skills will also be introduced. *Prerequisites: Psychology 11, Mathematics 8, and instructor's permission.*

150. Social Psychology

Study of the influence of social environment on psychological processes and behavior. Topics covered include person perception, social comparison processes, attitude change, aggression, and behavior in small groups. *Prerequisite: Psychology 10 or 11. Credit for this course cannot be given if Sociology 125 has been taken, and conversely.*

151. Seminar in Social Psychology

In this small-group class, students will explore special topics in social psychology through research and reading of current literature. Students also read and discuss articles dealing with current theoretical and methodological issues in social psychology. *Prerequisite: Psychology 150. Available only occasionally.*

155. Environmental Psychology

The study of human behavior as it is influenced by natural and man-made environments. A primary goal of this course is to integrate a variety of related approaches: psychology, anthropology, architecture, sociology, urban design. Naturalistic field study will be considered as an alternative to experimental laboratory research. Students are required to do a project that deals with one of the topics that is covered in the course: personal space, field experimentation, naturalistic observation, influences of the physical environment, social perception, territoriality, crowding, problems in architectural and urban planning. The course is restricted to advanced Psychology majors.

156. Law and Psychology

This course focuses on the interaction between psychology and law through consideration of differences between psychological and legal models of behavior, potential applications of psychological research to legal issues, and the roles social scientists play in the operation of the legal system. Topics covered include the insanity defense, deterrent effects of punishment, and jury behavior. *Prerequisite: Psychology 10 or 11.*

157. Organizational Psychology

This course explores the effects of organizational structure on individual and group behavior. Principles of behavior that may be applied to various large organizations, such as corporations, universities, and hospitals, are discussed. Topics covered included job satisfaction, group decisionmaking, power, leadership, and communication. *Prerequisite: Psychology 10 or 11.*

160. Theories of Personality

Critical analysis of major theories of personality with emphasis on therapeutic and research implication. Considerable attention is given the development of theory construction and analysis skills. Theories covered include Freud, Jung, Adler, Rogers, Sullivan, Kelley, Bandura, and others. *Prerequisite: Psychology 11.*

161. Advanced Topics in Personality I

This course is designed for advanced students interested in pursuing specific topics in personality. Possible topics include consciousness, personality development, anxiety, frustration, aggression, and psychoanalytic psychology. *Prerequisite: Psychology 160. Available in alternate years.*

165. Physiological Psychology Neural basis of Behavior

Emphasis on the neuroanatomical, neurochemical, and neurophysiological correlates of motivation, emotion, learning, and memory. Other topics include the neural regulation of sleep and arousal, mechanisms of drug action and neuropathology. Laboratory will include a study of brain anatomy and the application of physiological techniques to the study of animal behavior. Lectures and laboratory. *Prerequisite: Psychology 10.*

166. Advanced Topics in Neuropsychology

An in-depth coverage of special interest areas relating to brain mechanisms and behavior. The aim of this offering is to give intensive coverage to a single advanced topic in neuropsychology. Possible topics include neuroanatomy and neurochemistry, psychopharmacology, hormones and behavior, biofeedback, neural basis of aging, and neuropathology. *Prerequisite: Psychology 165. Available in alternate years.*

170. History and Systems of Psychology

Origin and development of modern psychological approaches, including psychoanalysis, behaviorism, Gestalt, humanism, and existentialism. Conceptual issues are emphasized.

175. Humanistic Psychology

The historical and conceptual "roots" of humanism are surveyed, and the implications of the "third force" for therapy and research are discussed. Existential psychotherapy, closely allied with humanism, is given special attention.

182. Seminar in the Psychology of Motivation

A series of assigned readings and reports from classic and contemporary sources in the experimental and theoretical literature on motivation. Investigation of special problems. *Prerequisite: Psychology 112 or special permission. NCX**

184. Seminar in the Psychology of Learning

A series of assigned readings and reports from classic and contemporary sources in the experimental and theoretical literature on learning and thinking. NCX*

185. Developmental Psychology I

This is the first course in a sequence of courses that will explore the development of individuals over the course of the life cycle. Topics for the year course will include (1) principles and theories of development; (2) perceptual, cognitive, social, and personality development; (3) family, school, and other societal influences on development; and (4) applied issues in child rearing, education, and other socialization practices. Students will have an opportunity to clarify their own values about having and raising children and about the responsibilities of society in general to children. The course is organized on an age-stage basis. This first course usually covers developmental principles, prenatal development, infancy, and the toddler period. *Prerequisite: Psychology 10 or 11.*

186. Developmental Psychology II

This is a continuation of the sequence beginning with Psychology 185. This quarter usually covers the early and middle childhood years, i.e., approximately ages 4 through 11. Intelligence, schools, sex roles, achievement, and prejudice are topics of special attention. *Prerequisites: Psychology 10 or 11 and either Psychology 80 or 185.*

187. Developmental Psychology III

This is a continuation of the sequence beginning with Psychology 185. This quarter usually covers the age period from puberty through early adulthood. Topics include intellectual development, identity, sexuality, moral development, values classification, and the capacity of humans to change. This course is part of the Gerontology emphasis. *Prerequisites: Psychology 10 or 11 and either Psychology 80, 185, or 186.*

188. Adult Development Seminar

This small course will cover the period of young adulthood through middle age. Topics will include stages and transitions in adult life, the concept of life crisis, and the interplay of situations and personality. An organizing theme will be commitment and choice. *Prerequisite: Psychology 11.*

189. Developmental Psychology Seminar

This course will be a small enrollment discussion class for Psychology majors. Students will pursue readings from the original theoretical and empirical journal literature on some topic area from developmental psychology. The topic will vary from year to year. All students will prepare research proposals as term projects. *Prerequisite: Psychology 185, 186, or 187 and permis-*

* Exempted from challenge

sion of the instructor. Available only occasionally.

196. Psychology of Aging

This course surveys the changes in individual lives that come with aging. Both changes within the person and those occurring in the life situation are considered. Special attention is given to the special problems that older people often encounter. *Prerequisite: Psychology 10 or 11. Available in alternate years.*

197. Advanced Seminar

Intensive focus on selected specialized topics, which vary from year to year. Prerequisite: permission of instructor. NCX*

198. Internship/Practicum

Clinical experience in community agencies. Involves selected readings. Open to upper division students with average GPA of 3.0 or better, who have received permission of a faculty sponsor.

199. Directed Reading/Directed Research

Independent projects may be undertaken by upper division students with a faculty sponsor. To be eligible to receive a course credit for such research, the student must submit a formal written proposal and have it approved by the sponsoring faculty member, the Department Chair, and the Dean. The proposal must be submitted before the end of the previous quarter and it must meet the University-wide requirements for independent study credit. These requirements are available from the Department Chair or Dean.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF RELIGIOUS STUDIES

Professors: Joseph A. Grassi, Theodore Mackin, S.J.
Associate Professors: Frederick J. Parrella, James W. Reites, S.J., *Chair*
Assistant Professors: James. A. Donahue, J. Leon Hooper, S.J., Anne Marie Mongoven, O.P., Philip B. Riley, Robert L. Schmitt, S.J., Francis Smith, S.J., James E. Sweeters
Acting Assistant Professor: Martin L. Cook
Lecturers: Rita Claire Dorner, O.P., Daniel V. Germann, S.J., Salvatore A. Tassone, S.J., Tennant C. Wright, S.J.
John Nobili, S.J., Professor: Theodore J. Mackin, S.J.

The Department of Religious Studies offers courses as part of the University's Core Curriculum and offers a major program for those who wish to concentrate in the study of religion and theology. The department's aim is to enable students to investigate and examine their life, their world, and their education in light of human religious traditions.

Because of the University's commitment to examine diverse religious traditions, the Department of Religious Studies offers a wide range of courses; and because of the University's commitment to the Catholic tradition, the Department offers a special opportunity for students to pursue and examine their own Catholicism in an academic context.

REQUIREMENTS FOR MAJOR

Requirements in Arts and Sciences

In addition to the University and Bachelor of Arts requirements in general education for all students (page 23), the following are specific for students completing the major in Religious Studies.

* Exempted from challenge

Philosophy: Two courses. Students taking the three-course core sequence in History of Philosophy fulfill this requirement.

Foreign Language: By the end of the fall term of the senior year, the student must complete a reading proficiency test, administered by the Department of Religious Studies, in one classical or modern language.

History: Two courses. The department prefers that these be in the History of Western Civilization.

Fine Arts: Two courses selected from among those offered by the Departments of Art, Music and Theatre Arts. Students taking the three-course core sequence in Art History fulfill this requirement.

Requirements in Religious Studies

Lower Division: In consultation with their academic adviser, students are to select four lower division courses from among each of the three areas of Scripture, Systematic Theology, and Cross-cultural Religious Studies.

Upper Division: Again in consultation with their academic adviser, students are to select eight upper division courses in Religious Studies. One of the eight required courses is to be Religious Studies 199: Directed Reading and Research. Five of these courses must be selected from among the Religious Studies seminar courses for majors that are offered each quarter. These seminars consist of a six-course sequence offered on a two-year cycle. The seminar courses include two courses in Systematic Theology, one each in Scripture, Religion and Society, Religious Ethics, and the History and Method of Theology.

Senior Research Paper: All majors in Religious Studies are required to submit a project during their senior year. The project will be completed in conjunction with the Directed Reading and Research course and will be supervised by the faculty directing this course.

Biblical Languages: Koine Greek, taught in the Classics Department, and Biblical Hebrew, taught in the Religious Studies Department, are recommended for students intending to do graduate studies in Scripture.

Introductory Level Courses

1. Introduction to Religious Studies

An introduction to the ways in which men and women have been religious. Reflections on the contemporary ways of being religious, especially in light of religious pluralism and secularism.

2. Introduction to the Old Testament

A survey of the history of the people of Israel from the exodus through the post-exilic period to the Christian era, with particular attention on the formation of the Old Testament literature and on the developing form and content of the people's religious belief.

3. Introduction to the New Testament

A study of the formation of the New Testament literature in the first generations of the Christian community; an interpretation of the literary forms used by the community; an examination of the form and principal content of the primitive belief and worship.

4. Introduction to Christian Theology

An introduction to Christian theology through an examination of Protestant and Catholic common roots.

5. Introduction to Catholic Theology

An introduction to the themes and methods of Catholic theology. Emphasis given to Scripture and tradition in light of contemporary issues.

6. Introduction to Christian Origins

A study of the environment in which Christianity began: Judaism in the time of Jesus (Qumran community, Pharisees, Zealots, Sadducees, ordinary people); the Hellenistic and Roman religions. The earthly ministry of Jesus. The transition from Kingdom to Church. The emergence of Christianity from Judaism.

7. The Practice of Meditation

The study and practice of various forms of Eastern and Western meditation.

15. Introduction to Protestantism

Focuses on the most important figures of the Reformation (Luther, Zwingli, Calvin, the radical reformers) and issues (faith, justification, good works, authority, Scripture, the Church, the ministry). Relates these topics to contemporary ecumenical theological discussion.

17. Eastern Religions

The course is designed to investigate religion as a way of life in the Far East. For students who know little about the religious cultures of the Far East but who recognize the great impact religion has had on the Eastern peoples.

18. Western Religions

A study of the religious origins of Western man. Prehistoric and primitive cultures will be briefly considered, but a more detailed investigation will be made into the major religious cultures of the Middle East that have had a profound influence on values in the West.

20. Introduction to Christian Ethics

A study of the dynamics of Christian conduct and of the moral implications of the Christian commitment. The formulation of the principles of a Christian ethic, their application to selected areas of moral conduct in contemporary life, e.g., to wealth and poverty, violence and nonviolence, war and peace, and interpersonal relations.

25. Women and Religion§

An investigation of the role of women in the religious traditions of East and West. A study of the concept of feminine and masculine symbolism in matriarchal and patriarchal social structures.

30. Introduction to the Hebrew Bible

This course will introduce the student to both the historical-critical school of interpretation of the Bible, and the traditional rabbinical interpretation. It will present the origins and history of the Jews as revealed in their Sacred Writings.

40. Christian Liturgy I

The course leads the students into a living appreciation of the structure and rhythm of liturgical worship and of its function as Christian celebration in such ceremonies as the Mass, the Sacraments of Initiation, etc. The course stresses both content and learning liturgy by actually putting together liturgical celebrations.

41. Religious Symbolism and Myth

This course is an introduction to the meaning and function of symbol and ritual in human life and in Christian worship. The course will include a study of those symbolic ritual actions of the Church that are called sacraments. Some questions addressed will be (1) how do symbol and ritual express and shape human life; and (2) how do sacraments express and shape the identity of Christians as church.

48. Zen Buddhism

This course combines a study of Zen Buddhism with the actual practice of Zen meditation and some in Zen ritual.

§ Course included in Women's Studies Program

Intermediate Level Courses

53. Death and Religion

A study of biblical, Jewish, Christian, Eastern, humanistic, and psychic claims about the nature of death and the possibility and nature of an afterlife. Modern philosophical assessments of the cogency of those claims are read and evaluated, and the relation (or nonrelation) between a belief in afterlife and meaningful human existence will be considered.

54. Christianity and World Religions

A discussion of religious pluralism as understood primarily in Judeo-Christian tradition. Issues covered include revelation, authority, truth and intra-religious dialogue.

58. The Contemporary Church

This course will study the contemporary Christian (and more specifically Roman Catholic) Church. The course will draw from the New Testament, Church documents since the Second Vatican Council, and some contemporary fiction that treats aspects of the Church.

64. Christ in the Four Gospels

This course deals with the formation of the Gospels and the individual portrait and interpretation of Jesus by each of the evangelists. Consideration is also given to the historical ministry of Jesus. The course includes an overall comparison of the Christologies in each of the four Gospels.

65. The Christ of Faith

Selective theological interpretations of Jesus Christ, from Biblical literature, the history of Christian doctrine, and modern theological scholarship. The humanity and divinity of Jesus.

66. The Pauline Letters

A study of the letters attributed to Pauline authorship. An analysis of the Pauline theology.

67. The Synoptic Gospels

A study of the Synoptic Gospels, of the history of their formation, of their literary forms. An analysis of Salvation History as contained in these sources.

68. The Johannine Writings

A study of the fourth Gospel, the Johannine letters and the Apocalypse, in reference to their vocabulary, imagery, and theological concerns.

69. The Person of Christ in the New Testament

A systematic study of the origins in Scripture of Christian belief in the person and natures of Jesus, and of his work in redeeming.

70. Psychology and Religion

A study of the phenomenon of religion as expressed in the various religious literatures, using both the psychological reflection on religion and the methods of analysis by psychologists, classical and contemporary.

71. The Theology of C.S. Lewis

A study of the religious writings of C.S. Lewis. This course examines Lewis' approach to religious truth and analyzes the major theological themes that are his concern.

73. New American Religions

With the revival of the spirit of religion in America has come the establishment of religious cults, some from the Christian tradition, some not. These cults have captured to some extent the imagination of many people, especially among the young. This course will investigate this phenomenon. Under scrutiny will be the Divine Light Mission, the Hare Krishna Movement, Witchcraft, and Satanism, as well as a number of other groups.

81. Theology of the Sacraments

An analysis of the work of Christ as sacrament of God the Father, of the Church as the sacrament of Christ, and of baptism, confirmation, reconciliation, healing, the Eucharist, and Orders as the principal sacramental actions of the Church (marriage is studied in a separate course). The course studies the origins in the Scriptures, as well as the traditional theological interpretations, of this sacramental nature.

82. The Theology of Nonviolence

An investigation of nonviolence not only as an instrument of social change but as a way of life resulting from the Christian commitment.

83. Christian Eschatology

This course studies the ultimate hopes of the Christian faith and analyzes the classical Christian symbols of judgment, heaven, hell, purgatory, and the movement of history to the Reign of God.

84. Great Christian Mysteries

From a Biblical and historical point of view, the central Christian mysteries of Christ, God, the Trinity, Grace, Sin, Redemption, Man and Human Destiny are studied.

90. Contemporary Judaism

A study of Judaism in the twentieth century in terms of its principal cultural and social influences, its religious forms, and theological teaching. (This course is partially funded by the Jewish Chautauqua Society.)

92. Contemporary Protestant Thought

Selections From Karl Barth, Paul Tillich, Rudolph Bultmann, and other prominent twentieth-century thinkers.

Advanced Level Courses

114. Ethics and the Professions: Business and Law

This course examines the underlying beliefs that shape the moral understanding of the professions of business and law. Some of the topics explored include the meaning of a profession, images for self-understanding within the professions, types of moral reasoning used in professions, codes of professional conduct, the role of the professions in a democratic society, and the meaning of vocation and personal response to one's God in the light of professional choices.

115. Ethics and the Professions: Medicine and Science

This course examines the underlying beliefs that shape the moral understanding of the professions of medicine and science. Some of the topics explored include the meaning of a profession, images for self-understanding within the professions, types of moral reasoning used in professions, codes of professional conduct, the role of the professions in a democratic society, and the meaning of vocation and personal response to one's God in the light of professional choices.

116. Ethics and the Professions: Education, Ministry, Social Work

This course examines the underlying beliefs that shape the moral understanding of the professions of education, ministry, and social work. Some of the topics explored include the meaning of a profession, images for self-understanding within the professions; types of moral reasoning used in professions, codes of professional conduct, the role of the professions in a democratic society, and the meaning of vocation and personal response to one's God in the light of professional choices.

122. The Person of Christ in the New Testament

This course deals with Jesus' understanding of himself and his mission and also the interpretation of these by the New Testament writers. The different major Christologies of the New Testament will be studied in order to bring out the unity and diversity of their interpretation of Christ.

129. Religion and Personal Growth

An application of the basic insights of religion and psychology to the process of personal growth.

134. Moral Choice in the Nuclear Age

This course will explore the ethical questions surrounding the uses of nuclear power in modern warfare and modern society. The course's particular focus will be on the issue of conscience, that is, the process of making decisions about the morality of different aspects of the nuclear problem. How does

one go about making informed moral responses to nuclear issues?

135. Love and Justice

The claim has been made by some theologians, notably Reinhold Niebuhr, that societies cannot be moral; by their very nature they cannot respond to persons on the basis of love or justice. This course will explore this thesis and investigate how love and justice are related to one another both in personal relationships and in human societies.

136. The Bible and Social Ethics

A study of the prophetic tradition of the Old and New Testaments with special emphasis on biblical justice and love and their meaning in today's society.

138. Theology and Medicine

This course provides an introduction to the major issues in biomedical ethics. The religious tradition has had a significant influence on the development of approaches to these questions. Consequently, the course will also investigate the methods and theological convictions of major Catholic, Protestant, and Jewish thinkers. Among the issues to be examined are the following: basic principles of biomedical ethics, genetic interventions and reproductive technologies, life and death, abortion, informed consent, euthanasia, patients' rights, professional responsibilities, confidentiality, and pastoral ministry in health care.

139. Ethics and Politics

This course both examines the history of the institutional relationship between Church and state and attempts to spell out various forms of the cultural interaction between politics and religion. Particular emphasis is given to the Anglo-American modes of separating and relating church and state, religion and politics, and the impact of Protestant and Catholic liberal and conservative reactions to the American experience.

140. Ethics and Warfare

A study of historical and contemporary approaches to the ethical issues that arise in warfare. The history of the development of Christian thought on war is examined and the applicability of that thought to modern technological war evaluated.

141. Religious Autobiography

This course will study selected Christian autobiographies from St. Paul to Dag Hammarskjold.

142. Christian Mysticism

A study of selected writers in the contemplative and mystical traditions of Western mysticism.

146. The Christian Experience of God

This course explores the nature of religious experience with emphasis on how the Christian community expresses or symbolizes its experience of God.

148. Human Sexuality

This course will explore issues of human sexuality in light of a Christian self-understanding. Its aim is to contribute to a fuller understanding of the meaning and purpose of sexual expression by investigating the ethical, religious, psychological, and political dimensions of sexuality. Topics to be treated include sexuality and personal identity, sexuality and relationships, pre-marital and marital sex, homosexuality, power and sex, the politics of sex, Church perspectives on sexuality, and Bible and sexual self-understanding.

149. The Theology of Marriage

A study of Christian marriage understood from the Scriptures, from recent Catholic writing, and from a humane psychology of the human person. A survey of Roman Catholic Canon Law on marriage.

156. Belief and Unbelief

An examination of the challenges to belief in the modern era and some responses to them. Primary texts studied. Issues covered include the problem of evil, religious projection and the basis in experience of religious assertions.

157. God in Contemporary Thought

A study of the question of God's existence and nature in the writings of contemporary thinkers.

173. Faith and the Holocaust

This course examines the history of the Nazi attempt to totally exterminate the Jews, and reflects on the enormity of this evil and the problems it might pose for faith.

177. Contemporary American Religion

This course is designed to encourage the spirit of ecumenism in a practical and scholarly way. Subject to study and inquiry will be the rich variety of theological and liturgical differences found in contemporary Christian churches, with corresponding historical reasons for their development.

180. Christian Liturgy II

This course is designed for students who have already taken Christian Liturgy I and who wish to develop further their liturgical knowledge and experience. The course involves planning and evaluating various liturgies as well as going deeper into liturgical theory and spirituality.

185. Literature and Theology

Significant literature from various ages and cultures is studied for its theological content and relevance for the contemporary student.

191. The Development of Doctrine

A study of the development of Christian doctrine through (1) an examination of the Christological formulations of the early Church, (2) an examination of the rise of the issue of development in modern Catholic theology, and (3) an examination of contemporary discussions of how doctrines develop in reference to current issues in theology.

192. Special Questions in Religious Studies

194. Ecumenism

A study of the movement toward closer relationships, cooperation, and (in some cases) merger among Protestant and Orthodox Churches, and, more recently, between the Roman Catholic Church and other Christian churches. Theological and non-theological factors affecting interchurch relationships.

195. Directed Study: Biblical Hebrew I

For Religious Studies majors only.

196. Directed Study: Biblical Hebrew II

For Religious Studies majors only.

198. Practicum in Religious Studies

A combination of teaching or religious work, special readings, and theological reflection under the guidance of the department faculty. Restricted to majors in Religious Studies.

199. Directed Readings and Research in Religious Studies

For Religious Studies majors only.

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF THEATRE ARTS

Associate Professor: William R. James
Assistant Professor: Frederick P. Tollini, S.J., *Chair*, Jagienka A. Drweski
Acting Assistant Professor: Thomas Shanks, S.J.
Lecturers: Patricia Bendigkeit, Gary S. Daines, Albert L. Gibson, Barbara Murray, Sheldon Ossosky, John Privett, S.J., Carolyn Silberman

The Department of Theatre Arts provides course work leading to the Bachelor of Arts Degree, and produces a number of plays each year in the Louis B. Mayer Theatre and the Fess Parker Theatre.

Theatre Arts majors must fulfill the University and College requirements for the B.A. degree. In addition, candidates for the B.A. must complete the requirements in their selected area of emphasis.

Degree Programs

The department offers three distinct programs: Dramatic Arts, Dance, and Television Production. Each area provides the opportunity for a broad education and also for specialized training. A student may pursue each of these three programs with several goals in mind: as part of an undergraduate liberal arts education; as preparation for graduate studies in Theatre, Media Communications, and Performing Arts; as preparation for further studies in Arts Administration, Business, Law, and Teaching; as pre-professional training for certain areas of theatre and television.

Dramatic Arts Program. The program offers coordinated courses in dramatic literature and theatre history, acting, design, and technical production. Depending on the emphasis chosen by the student, departmental requirements are supplemented by recommended electives to form an integrated program.

Requirements for the Bachelor of Arts Degree in Theatre Arts: Dramatic Arts Emphasis

Lower Division (6 courses)

1. Basic Acting (Theatre Arts 20)
2. Basic Stagecraft (Theatre Arts 30)
3. Either Basic Costume Construction (Theatre Arts 31) or Basic Stage Lighting (Theatre Arts 32)
4. History of the Theatre and Dramatic Literature I, II, III (Theatre Arts 50, 51, 52)

Upper Division (8 courses)

1. Playscript Analysis (Theatre Arts 171)
2. One Shakespeare course (Theatre Arts 116, 117, or 118)
3. One Dramatic Literature course (any one of those number 110–119)
4. Five Theatre Arts courses related to area of emphasis

Lower or Upper Division

1. Two quarter units of Production Workshop (Theatre Arts 39 or 139)

Performance opportunities include departmental productions (5-6 each year), course-related presentations, and student recitals.

Dance Program. Dance majors follow an organized sequence of courses in modern dance technique, choreography, theatrical dance forms, and dance history. Courses are supplemented by classes with professional guest artists.

Requirements for the Bachelor of Arts Degree in Theatre Arts: Dance Emphasis

Lower Division (6 courses)

1. Introduction to Theatre Arts (Theatre Arts 10)
2. Basic Acting (Theatre Arts 11 or 20)
3. Basic Stage Lighting (Theatre Arts 32)
4. Intermediate Modern Dance I, II, III (Theatre Arts 46, 47, 48)

Upper Division (8 courses)

1. Advanced Modern Dance I, II, III (Theatre Arts 143, 144, 145)
2. Choreography I, II, (Theatre Arts 146, 147)
3. History of Dance (Theatre Arts 149)
4. Two Theatre Arts courses in choreographic or performance projects

Specific electives are recommended depending on the student's emphasis. Students entering with no dance background must commence training with Theatre Arts 43 (Basic Dance I). Independent study may include courses in the university's post-mastectomy "Dance is Therapy" program.

Performance opportunities in dance include the Choreographers' Gallery, the annual Dance Concert in the Mayer Theatre, student recitals, informal concerts, and combined performance with the Dramatic Arts Program in musicals and stage plays.

Television Production Program. This option offers study and training in television production and performance.

Requirements for the Bachelor of Arts Degree in Theatre Arts: Television Production Emphasis

Lower Division (5 courses)

1. Fundamentals of Speech (Theatre Arts 1) or Written and Oral Communication (Theatre Arts 7)
2. Introduction to Mass Communication (Theatre Arts 8)
3. Introduction to Television Production (Theatre Arts 9)
4. Basic Acting (Theatre Arts 11 or 20)
5. Basic Stage Lighting (Theatre Arts 32)

Upper Division (8 courses)

1. Television Writing (Theatre Arts 163)
2. Television Production Planning (Theatre Arts 165)
3. Television Directing, I, II (Theatre Arts 166, 167)
4. Broadcast Journalism (Theatre Arts 168)
5. Advanced Television Producing/Directing (Theatre Arts 169)
6. Two Theatre Arts courses related to T.V. production, internship/practicum (Theatre Arts 198), and independent study (Theatre Arts 199) recommended.

Students are encouraged to take additional courses in journalism, political science, film, theatrical production, and business. Curriculum models are available for students interested in careers in television broadcasting and writing.

Theatre Production Program

The theatrical season at the Louis B. Mayer and Fess Parker theatres usually includes at least four faculty-directed plays, one or two student-directed plays, the major Dance Concert, and several related events. Performances by guest artists and theatrical companies are frequently sponsored by the Department of Theatre Arts.

Active participation in these productions is open to all members of the University community. Though the plays are an essential part of the Theatre Arts major, they are also an opportunity for other students and faculty to work in theatrical production. Mayer Theatre productions often include the appearance of a professional guest artist, actor, or director.

Besides the regular season, the Department of Theatre Arts sponsors a summer season called Theatre Santa Clara. This is a semi-professional theatre program that produces plays and offers opportunities for experimental drama workshops, original playscript readings, and other events in the Mayer Theatre complex.

1. Fundamentals of Speech

A basic course in oral communication, stressing the practice of extemporaneous speaking. Lecture. Practice in informative and persuasive speaking.

5. Voice for the Stage I

Voice production and articulation. Lecture. Diagnosis. Exercises for improvement. Scansion.

7. Written and Oral Communication

Oral and written argumentation, analysis of structure, reasoning, and strategy in communication to motivate—persuade.

8. Introduction to Mass Communication

The development, process, effects, and responsibilities of the media of mass communication. Media skills necessary for media literacy and for improving mass media performance.

9. Introduction to Television Production

Basic theory and technique of camera operation, lighting, audio, scripting, staging, directing. Hands-on practice.

10. Introduction to Theatre Arts

The functions and techniques of the theatre artist. Vocabulary of the theatre. Represen-

tative plays studied as pieces to be performed.

11. Acting for Nonmajors

Basic principles of role-playing for those with an interest in the acting process.

20, 21. Basic Acting I, II

Improvisation. Theatre Games. Role-playing. Sensitizing of physical and mental tools. Analysis of skills and problems of individual students.

22. Introduction to Literature: Drama

See English 22. Recommended as third composition course for Theatre Arts major, when taken for English credit.

24. Creative Dramatics

Techniques of dramatic play used to develop flexibility, fluency, and creative insight, especially in children. Includes storytelling, role-playing, discovery games, problem-solving, movement/rhythm exercises. Recommended for those planning careers in teaching and working with children.

25. Drama Workshop

Study and performance of scenes from plays. Applies principles and methods taught in basic acting courses. *Prerequisite: Theatre Arts 11 or 21, or permission of instructor.* Recommended for Theatre Arts majors and nonmajors (2 units).

28. Summer Theatre

Performance or technical work in six-week summer program and run of production for Theatre Santa Clara. (TSC)

29/129. Rehearsal and Performance

Active participation in the preparation and performance of departmental productions. Includes actors, stage managers, assistant stage managers or assistants to the director, major design/technical assignments. *Prerequisite: approval of director of production.* (2 units). May be repeated for a total of 8 units.

30. Basic Stagecraft

Principles and techniques of stagecraft. Nomenclature. Handling and construction of scenery. Use of hand and power tools. Blueprint reading.

31. Basic Costume Construction

Introduction to making costumes. Pattern drafting, sewing techniques, fabric studies.

32. Basic Stage Lighting

Principles and practice. Color, instrumentation, basic electricity, and electronics. Elementary design theory and practice.

33. Make-up for Stage

Basic principles of make-up for the stage. Youth, old-age, and special problems. Use of all media.

34. Basic Sound

Basic techniques and equipment required for the proper use of sound in the performance of plays and musicals. (2 units)

39/139. Production Workshop

Training in development of technical skills for stage production. Includes directed work in scenery and costume construction, lighting and sound. Two units of credit. May be repeated for a total of 8 units. Not applicable to paid work hours, or to lab hours connected with stagecraft courses.

40. Basic Jazz Dance I (2 units)

41. Basic Jazz Dance II (2 units)

42. Basic Ballet I (2 units)

43. Basic Ballet II (2 units)

44. Basic Modern Dance I

45. Basic Modern Dance II

46, 47, 48. Intermediate Modern Dance I, II, III

Continuation of 45. *Prerequisite: permission of instructor.*

49. Theatrical Dance

Dance forms related to the American Musical Theatre. (2 units.)

50, 51, 52. History of the Theatre and Dramatic Literature I, II, III

A survey of the development of theatrical practice, drama, and criticism from the Ancient Greeks to the present. (50: Ancient and Medieval; 51: Renaissance and Neoclassic; 52: Romantic and Modern.)

54. Shakespeare

See English 54.

60. Stage Management

Techniques and responsibilities of the backstage administrator. Analysis of pre-production, audition, rehearsal, and performance duties. Methods for controlling personnel, paperwork, and equipment. (2 units)

101. Advanced Public Speaking

Principles and practice of oral communication stressing extemporary speaking and speech analysis. Aristotelian form and method applied to Expository, Oratory, and Impromptu speech. *Prerequisite: Theatre Arts 1 or permission of instructor.*

105. Advanced Voice for Stage

Exercise and practice in the oral interpretation of dramatic literature. Student actors learn the methods of scansion and language analysis; examine the diction, rhythm, vocal melody, imagery, and use of speech figures in dramatic dialogue; and apply this knowledge in the performance of significant passages from world drama. *Prerequisite: Theatre Arts 5.*

110. Classical Drama

See English 110.

112. Modern Drama

A study of continental drama from Ibsen to the present in translation. Alternate years.

113, 114. English Drama I, II

See English 113 and 114.

116, 117, 118. Shakespeare

See English 116, 117, and 118.

119. American Drama

A study of drama in the United States from 1787 to the present. Emphasis on the period after 1920.

123. Characterization

A detailed study of creative method in role development. *Prerequisite: Theatre Arts 21 or equivalent.*

125. Drama Workshop

See Theatre Arts 25.

126. Acting Styles I

Lecture, demonstration, and practice in acting styles from Greek Classical to the nineteenth century. *Prerequisite: Theatre Arts 123 or equivalent.* Alternate years.

127. Acting Styles II

A continuation of Acting Styles I with focus on the post-Chekovian and Ibsenite styles of acting in the nineteenth and twentieth centuries. *Prerequisite: Theatre Arts 123.* Alternate years.

128. Summer Theatre

See Theatre Arts 28.

129. Rehearsal and Performance

See Theatre Arts 29.

130. Advanced Stagecraft

Development of skills in metal and plastics. Welding, special materials, and free-form structures. *Prerequisite: Theatre Arts 30 or equivalent.* Alternate years.

131. Theatre Graphics

Introduction to graphic representation. Drafting, mechanical perspective, freehand drawing, isometrics.

132. Lighting Design

Application of lighting skills to production design. *Prerequisite: Theatre Arts 32 or equivalent.* Alternate years.

133. Scene Design

Application of graphic skills to scenic design. Styles, scene painting technique, set decor. *Prerequisite: Theatre Arts 131 or equivalent.*

134. Costume History I

History of fashion in Western world from ancient times to seventeenth century. Examination of social background and its influence on fashion. Alternate years.

135. Costume History II

History of fashion in Western world from eighteenth century to the present. Examination of social background and its influence on fashion. Alternate years.

136. Costume Design

Principles of costume design for the stage. Fabrics and special materials. Rendering. *Prerequisite: Theatre Arts 134, 135, or permission of instructor.*

137. Pattern Drafting and Draping for the Stage

Both drafting and draping techniques for a basic bodice, skirt, sleeve, and collars and the techniques for developing variations. Emphasis is placed on drafting period garments. *Prerequisite: Theatre Arts 31 or permission of instructor.*

138. Advanced Scene and Costume Design

An interdisciplinary course in developing concepts for the production of several dramatic works. *Prerequisite: Theatre Arts 133 or 136. Alternate years.*

139. Production Workshop

See Theatre Arts 39.

143, 144, 145. Advanced Modern Dance I, II, III

Studio course in the techniques of Modern dance. *Prerequisite: Theatre Arts 48 or eqivalent.*

146, 147. Choreography I, II

Improvisation, composition. Theory and principles of dance choreography. *Prerequisite: Theatre Arts 145 or equivalent.* Alternate years.

149. History of Dance

Historical role of dance in society from ancient to modern times. Alternate years.

150. Special Topics in Theatre History

May be repeated for credit as topic varies.

160. Theatre Administration

Functions and techniques of the producer, business manager, house manager, stage manager, treasurer, and publicist. Alternate years.

163. Television Writing

In this workshop class, students will develop scripts for various nondramatic television formats (e.g., educational programs, commercials, specialized programs). Students will learn each of the steps in taking a script from concept to contract. *Prerequisite: Theatre Arts 9.*

164. Television Dramatic Writing

Art and technique of writing for television. Dramaturgic principles, scenario writing, teleplays. *Prerequisite: permission of instructor.*

165. Television Production Planning

Theory and practice of organizing and producing a television program. Assessment of audience needs, development of creative show ideas. *Prerequisite: Theatre Arts 163 and 166.*

166. Television Directing I

Principles and techniques of television directing. Aesthetics, analysis, and production problems. *Prerequisite: Theatre Arts 9 or equivalent.*

167. Television Directing II

Principles and techniques of T.V. directing applied in production situations. Directing, evaluating, and revising video interludes, dramatic monologues, dialogues, longer dramatic scenes. *Prerequisite: Theatre Arts 166.*

168. Broadcast Journalism

Researching, writing, editing, and reporting television news and documentaries; ethics and law. *Prerequisite: Theatre Arts 166.*

169. Advanced Television Producing/Directing

Principles and techniques for advanced television production projects. Remote surveys, techniques of live television, film-style shooting, advanced editing, budgeting. *Prerequisites: Theatre Arts 165 and 167.*

170. Playwriting

Critical analysis of dramatic structure for the playwright. Scenarios, character studies, writing of original plays. Alternate years.

171. Playscript Analysis

Study of selected plays with emphasis on interpreting the script in terms of production values.

172. Theory of Stage Directing

A basic course in the problems, techniques, and theory of directing plays for the live theatre. *Prerequisites: Theatre Arts 11 or 20 and 50.*

173. Stage Directing Practice

A two-quarter project in directing. Projects include a short play fully staged. *Prerequisite: Theatre Arts 172 or equivalent.*

186. Special Topics in Drama

Course reserved for special upper division topics in dramatic literature. May be repeated for credit as topic varies.

191. Seminar in Arts Administration

Multidisciplinary studies (Art, Music, Theatre) in problems of Arts Administration (Art and Music 191).

198. Practicum

Reserved for projects with recognized institutions outside of the University. Written proposal must be approved by supervisor and Department Chair one week prior to registration.

199. Recital/Creative Projects/ Directed Reading/Directed Research

Comprises three areas of directed study: Recital, reserved for seniors in acting and dance; Creative Projects in directing, choreography, technical production, design, playwriting, administration, television production; Directed Reading and/or Research. Written proposal must be approved by supervisor and Department Chair one week prior to registration.

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION

The Leavey School of Business and Administration offers a professional education emphasizing humanistic and moral development as well as technical proficiency.

The Leavey School of Business and Administration confers a Bachelor of Science in Commerce degree in Accounting, Decision and Information Sciences, Economics, Finance, Management, and Marketing.

BACHELOR OF SCIENCE IN COMMERCE. The program of study for the degree of Bachelor of Science, which consists of a total of 175 quarter units, includes courses that fulfill the goals of the University curriculum, the School of Business and Administration curriculum and the respective departmental major curriculum.

For the Bachelor of Science degree, students must fulfill the following University and College requirements.

1. Composition and Literature

Three courses: (a) two courses in Composition and Rhetoric, normally English 1 and 2; and (b) one course in Writing or in Literature that includes a writing component. This course should preferably be taken after completing 60 quarter units.

2. Western Culture

Two courses in one of the following sequences: (a) English 11, 12, and 13; or (b) History 11, 12, and 13; or (c) Philosophy 11, 12, and 13; or (d) Art History 11, 12, and 13. The two courses in Western Culture should normally be taken in sequence.

3. Foreign Language

Successful completion of the second course of the first-year sequence in a single classical or modern language. Students who have successfully completed three years of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from the requirement.

4. Social Sciences

Two courses: Economics 1 and 2

5. Mathematics and Natural Sciences

Two courses: Mathematics 11 and 12

6. Ethics

One course in general or applied ethics from the ethics offerings in the Department of Philosophy

7. Religious Studies

Three courses: (a) two courses, normally taken during the freshman and sophomore years— one Introductory Level Religious Studies course and one Intermediate Level Religious Studies course and; (b) one Advanced Level Religious Studies course, taken after completing 88 quarter units. These courses are to be taken in sequence.

8. Accounting

Three courses: Accounting 1, 2, and 3

9. Computer Science

One course selected from Decision Sciences 17, Engineering 3, or Mathematics 10

10. Statistics

One course selected from Decision Sciences 40 or Economics 55

During their junior and senior years, students must complete the balance of the 175 quarter units required for graduating. Besides the Advanced Religious Studies course, these must include a minimum of 13 upper division courses (65 quarter units).

1. Eight courses providing a common core of knowledge
   a. Management 160 (Organization and Management)
   b. Marketing 181 (Principles of Marketing)
   c. Finance 121 (Financial Management)
   d. Economics 114 (Microeconomics)
   e. Decision Sciences 108 (Production Management)
   f. International Business: one course selected from Economics 180, Finance 151, Management 170, Marketing 178 or Accounting 133

g. Quantitative Analysis: one course selected from Decision Sciences 100, Mathematics 122, Economics 173, or Economics 174, Decision Science 104, Accounting 134.
h. Management 162 (Business Policy)

2. Five courses in one of the major fields

Students must also fulfill the course requirement for the departmental major. For these requirements, consult the departmental description for the respective major: Accounting, Decision and Information Sciences, Economics, Finance, Management, and Marketing.

Depending on the departmental major requirements, students will have a number of elective courses. At least 40 percent must be in courses offered outside the Leavey School of Business and Administration. It is expected that students will distribute their electives among the behavorial sciences.

The University also offers two programs, the International Business Studies Program, open to students in the School of Business and Administration and the College of Arts and Sciences, and the Retail studies Program, open to all students. Further information on these programs appears in the Special Program section of this catalog.

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION DEPARTMENT OF ACCOUNTING

Professor: Charles F. Louie, *Chair*
Associate Professors: Marlynn K. Bohman, Paul L. Locatelli, S.J.
Assistant Professors: Janice Bell, Jane A. Ou, James F. Sepe, Neal L. Ushman

The Accounting Program in the Leavey School of Business and Administration provides students with the conceptual and business foundation for careers in public accounting and in business, government, and not-for-profit organizations.

Requirements For Major

Lower Division. In addition to the University and School curriculum requirements, accounting majors must include the following courses in their lower division programs.

1. Legal Environment of Business (Management 18)
2. One course in oral communications, either Fundamentals of Speech 1 or Written and Oral Communications 7
3. One course in behavioral science chosen from psychology, anthropology, or sociology

Upper Division. The following upper division courses are required for all accounting majors: 130, 131, 132, 133, 136, 137, 138 and 134 or 104. Students preparing for careers in professional accounting should include 135 and Business Law 175.

1. Fundamentals of Accounting

An introduction to accounting principles and procedures underlying external financial reports. A description of double-entry bookkeeping and the accounting cycle is followed by analyses of accounting for cash, receivables, inventories, plant and intangible assets and liabilities. *Prerequisite: sophomore standing.*

2. Fundamentals of Accounting

A continuation of 1. Accounting for ownership interests in partnerships and corporations is covered and is followed by the study of the Statement of Changes in Financial Position and Financial Statement Analysis. Payroll accounting, departmental accounting, and manufacturing accounting, including job-order, process and standard costing, are also covered. *Prerequisite: Accounting 1.*

3. Managerial Accounting

An introduction to accounting for management planning and control. Topics covered include cost-profit-volume relationships, cost and revenue information for nonroutine decisions, and master budgets and profit planning. Standard costing, responsibility accounting, and decentralization and transfer pricing are also discussed in the context of management control of operations. *Prerequisite: Accounting 2.*

55. Survey of Accounting Principles

A broad overview of financial accounting principles for business enterprises. (Not open to students in the School of Business.)

130. Intermediate Accounting I

An intensive analysis of generally accepted accounting principles as applied to asset accounting. Topics covered include standards and alternative procedures for accounting for current assets, investments, plant and intangibles. *Prerequisite: Accounting 2.*

131. Intermediate Accounting II

An intensive analysis of generally accepted accounting principles as applied to accounting for liabilities, stockholders' equity, and the statement of changes in financial position. Also covered are accounting for income taxes, pension, leases, and the reporting of corporate earnings. *Prerequisite: Accounting 130.*

132. Advanced Accounting I

A study of accounting for business combinations and consolidated statements of affiliated corporations. Topics covered include purchase accounting and pooling of interest accounting, intercorporate asset transfers, and other reciprocal relationships. Other topics covered are segment reporting for diversified companies and supplementary reporting for changing prices including general price level changes and replacement cost accounting. *Prerequisite: Accounting 131.*

133. Advanced Accounting II

Three main topics are covered: international accounting including foreign operations and transactions and international accounting standards; accounting for public sector organizations and other not-for-profit organizations, including topics in governmental accounting and accounting for colleges, universities, and health and welfare organizations; partnership accounting from organization and operations to liquidation. *Prerequisite: Accounting 132.*

134. Accounting and Information Systems

An introduction to accounting information systems both in abstract and specific situations— in particular a study of the influence of computer-based information systems on the functions of the accountant and the accounting profession. The focus is on the concepts, applications, and design of accounting information systems that provide management with useful and relevant information. *Prerequisites: Accounting 3 and 160.*

135. Advanced Accounting Theory

This is a course in financial accounting theory. The historical development of accounting principles and accounting thought are covered. Accounting theories are studied at the structural, interpretational, and behavioral levels. Recent developments in empirical research and the role of research in accounting policy decisions of rule-making bodies are also covered. *Prerequisite: Accounting 132.*

136. Advanced Cost Accounting

A detailed study of job-order, process, and standard cost accounting systems. Budgeting and standard costs and cost-profit-volume analysis in planning and control are discussed. Decentralization, transfer pricing and divisional performance measurement, and the use of accounting data in capital budgeting decisions are also covered. *Prerequisite: Accounting 3.*

137. Auditing

An examination of the techniques used to obtain and evaluate evidence regarding (a) assertions about the quality of performance of management (operational auditing); and (b) assertions made by management in financial statements of the firm. The primary objective of the independent auditor's examination is the expression of an opinion on the fairness of management's assertions. This independent opinion must be supported by sufficient competent evidence. *Prerequisite: Accounting 131.*

138. Income Taxation I

Federal income tax practice and theory applied to the determination of tax liability of the individual. Similarities and differences, when appropriate, are indicated for partnerships and corporations. *Prerequisite: Accounting 131.*

139. Income Taxation II

Federal income tax theory and practice applied to the determination of tax liability of corporations, partnerships, estates and trusts, and gift taxes.

175. Advanced Business Law

A study of business law topics that are encountered in the practice of accountancy. Lectures and discussions will focus on business law questions that appear in the Uniform CPA Examination. Recommended for students preparing for professional accounting. *Prerequisite: Management 18 or 20.*

198. Internship

Opportunity for selected upper division students to work in local government units or firms. *Prerequisite: Upper division standing and approval of the Undergraduate Committee.*

199. Directed Reading and Research

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION
DEPARTMENT OF DECISION AND INFORMATION SCIENCES

Professors: Chaiho Kim, *Chair,* Steven Nahmias
Associate Professors: Stephen A. Smith, Zeb L. Vancura
Assistant Professors: Rajat Deb, Charles A. Feinstein, Manoochehr Ghiassi, Hugo Moortgat, Charles Schmidt
Joseph S. Alemany Professor: Chaiho Kim

The Department of Decision and Information Sciences offers instruction to all business students in the use of computers and management science techniques to solve the operational and decision-making problems of today's complex organizations.

The curriculum for the Decision and Information Sciences major (DIS) is designed for the following three groups of students: those who plan to pursue graduate studies in business or careers in management consulting; those who plan careers in operational management in business, government, and nonprofit enterprises; and those who plan to pursue careers in data processing and information systems management in business, government, and nonprofit enterprise.

Five electives from the following:

1. DIS 101, 102, 103, 105, 106, 107, 109, 110, 111, 115, 117; and

2. One course from Mathematics 122, 123; EECS 170, or 177 may be substituted.

15. Introduction to Microcomputers

An introductory course for students interested in the application of microcomputers. The students will acquire a basic understanding of microcomputer hardware and software. The topics selected may include disk operating systems, spread sheets, graphics, data base management, and word processing. The students will be solving problems in several areas using spread sheet and integrated software.

17. Introduction to Computer

This course introduces the student to the basic concepts of computer and computer programming. The course also introduces the student to the University's DEC System 2060 computer. The student acquires an extensive hands-on programming experience on this computer.

30. Structured Programming

An intermediate course in computer programming using PASCAL. Students learn how to develop and implement well-structured algorithms for solving nontrivial computational problems occurring in business management. *Prerequisite: DIS 17 or equivalent.*

31. Application Programs Development

In this course the student will develop business application programs. The language used will be COBOL. *Prerequisite: DIS 17.*

37. Advanced Computer Programming

This is a course in which the students learn various techniques of advanced programming concepts.

40. Statistics

Theory and applications of probability and statistics for managerial decision making. Topics covered include the probability theory, random variables, functions of random variables, sampling theory and techniques, statistical estimation and hypothesis testing, and simple and multiple regression analysis. The student will acquire hands on experience in problem solving with the SPSS or the SCSS statistical package on DEC System 2060 computer. *Prerequisites: Mathematics 11, Mathematics 12, and DIS 17 or equivalent.*

100. Quantitative Methods

This course will explore the concepts and applications of quantitative models for managerial decision making. The models studied will include those of linear programming, transportation, network, waiting line, and simulation. *Prerequisite: DIS 40 or equivalent.*

101. Multivariate Statistical Analysis

This is an introductory multivariate statistical analysis. The topics include multiple regression analysis, analysis of variance, discriminant analysis, factor analysis, and canonical correlation. The student will use extensively both the SPSS and the SCSS statistical software package on DEC System 2060. *Prerequisite: DIS 40 or equivalent.*

102. Seminar in Decision Science

This course deals with topics related to the current faculty interests. The course will consider relevant new developments in theories and applications in the area of decision science. *Prerequisite: permission of the instructor.*

103. Operations Research

This course introduces the fundamental concepts in operations research for controlling stochastic environment. A brief review of probability concepts will be followed by discussion of Markov processes with application to such areas as brand switching, waiting-line processes, and inventory models. *Prerequisite: Mathematics 11 and Mathematics 12.*

104. Management Information System

An introductory course in management information system. Topics include data processing technology, data management, the functions of MIS, MIS design, implementa-

tion and evaluation of MIS systems. *Prerequisite: DIS 17.*

105. Data Base Management

A study of the ways in which the large and very large data bases in business and other organizations are stored, retrieved, and updated. At the storage level or physical level, the appropriateness of different physical file structures for different applications is examined. At the conceptual level, the course deals with the principal approaches to modeling data: the relational, hierarchical, and network data models. Finally, the course deals with specialized languages for data management and the integration of the aforementioned concepts and capabilities in generalized data base management systems. *Prerequisite: DIS 104 or instructor's permission.*

106. Systems Analysis and Design

An introduction ot the concept of systems analysis and design with an emphasis on the computer based information system. *Prerequisite: DIS 30 or 31.*

107. Operating Systems

This course surveys the functions of the integrated sets of programs, called operating systems, which control the operation of computers. It builds the foundations for understanding the basic issues of data management, data communications, and performance evaluation of computer systems. Topics include asynchronous processes, concurrent processes, process and job scheduling, deadlock problems, memory managment, device management, file systems, and recovery and security procedures. *Prerequisite: DIS 30 or equivalent.*

108. Production Management

A survey of problems and analysis related to the production of goods and services. Topics include demand forecasting, production planning and scheduling, inventory control, material requirement planning, cost and quality control, facility location, and lay out. *Prerequisite: DIS 40 or equivalent.*

109. Office Information Systems

A survey of office automation for the business manager. Subject areas include an overview of current equipment, techniques for planning and evaluating office information systems, and human and organizational impacts of office automation. The course will provide practical experience in office automation through case study projects and use of the University's computer systems. *Prerequisites: DIS 17 and DIS 100, 104, or equivalent.*

110. Computer Simulation Modeling

This course will examine how computer simulation modeling can be used for the design and operation of complex processes or systems. Topics include theory and techniques of simulation and simulation languages such as SLAM, GPSS, and GASP. Examples of applications of simulation modeling to be studied will include inventory control, assembly and job shop scheduling, and manufacturing process design. *Prerequisites: DIS 30 and 40 or consent of instructor.*

111. Computer Communication Systems

This course studies the concepts, hardware, software, economics of data communication, computer networks and distributed processing systems. The topics covered include communication technologies, terminal types, single- and multi-host network configurations, network design, distributed processing modes, distributed data bases, cost-benefit analysis in telecommunications, and distributed processing. *Prerequisite: DIS 104.*

115. Planning Model Development

In this course students will learn how to use high level computer programming languages to develop comprehensive business and operational planning models. *Prerequisite: DIS 30 or 31 and 100 or equivalent.*

117. Software Development Project

In this course, students integrate system and programming concepts to develop a comprehensive software system. *Prerequisite: DIS 30 or 31.*

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION
DEPARTMENT OF ECONOMICS

Professors: Mario L. Belotti, William F. Donnelly, S.J., John M. Heineke, Thaddeus J. Whalen, Jr.
Associate Professors: Henry G. Demmert, Alexander J. Field, Carl Mosk, Thomas Russell, Hersh Shefrin, *Chair*
Assistant Professors: Richard T. Coz, S.J., Alan Taylor
Acting Assistant Professor: Laurence R. Iannaccone

A social science primarily concerned with the production and distribution of society's material wealth, economics deals with production, pricing, and investment at the corporate and industry levels and with the problems of unemployment, inflation, income distribution, government spending and taxation, and economic efficiency at the national level. Economists are also concerned with international economic relations and with problems related to the economic development of Third World countries.

Because of its methodology and its subject matter, economics provides an excellent background for the study of law. It is also acknowledged to provide the most useful and comprehensive academic preparation for entry into the MBA program.

The vast majority of graduates in economics enter careers in business, in domestic and international banking, in local, state, and federal governments, or in private economic consulting. Many pursue graduate work in economics, law, business, and public policy.

Requirements For Major

1. Economics 114, 115 and 116
2. Four Economics Electives

Lower Division Courses

1. Principles of Economics I

An introduction to the general principles, terminology, and methods of macroeconomics.

2. Principles of Economics II

An introduction to the general principles, terminology, and methods of microeconomics.

3. Principles of Economics III

A study of contemporary economic issues and problems. This course will use the methodology and tools learned in Economics 1 and 2 to investigate in detail some of the major economic issues of the day. *Prerequisites: Economics 1 and 2 or permission of the instructor.*

12. American Economic History

A study of the economic history of the United States with special emphasis on basic economic organizations, such as the business enterprise, the labor union, and the economic functions of government.

55. Statistics

Introduction to statistical methods and techniques for both discrete and continuous random variables.

Upper Division Courses

(Economics 1 and 2, or permission of the Undergraduate Committee, are required for all upper division courses.)

114. Microeconomics I

An introduction to the theory of demand, production, cost, and pricing.

115. Aggregate Economic Theory

The focus of this course is on the macro, or aggregative aspects of the economy. It emphasizes modern macroeconomic models, which aim at explaining the level of output, employment and prices.

116. History of Economic Thought

A study of the evolution of economic ideas and their influences on the development of economic practices. *Prerequisites: Economics 114 and 115.*

117. European Economic History

A study of the preindustrial environment and industrial growth patterns of Western Europe.

118. Comparative Economic Systems

In this course the performance of market economics is contrasted to that of centrally planned, nonmarket economies and to that of "mixed" economies. The question of performance is addressed from both a theoretical and a practical point of view.

120. Economics of the Public Sector

A microeconomic analysis of the role of government in the market economy. Topics include the supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process. *Prerequisite: Economics 114.*

121. Microeconomics II

The purpose of this course is to acquaint the student with applications of microeconomic theory to familiar economic problems.

122. Money and Banking

A theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy.

124. Industrial Organization

A microanalysis of the structure, conduct, and performance of American industry. *Prerequisite: Economics 114.*

125. Welfare Economics

A study of the principles by which economists evaluate the social desirability of alternative market arrangements. *Prerequisite: Economics 114.*

126. Economics and the Law

An application of the tools of economic theory to the analysis of law and legal institutions as they exist in the contemporary United States. Topics include a theory of property rights, the economics of the common law, income distribution and theories of economic justice, the economics of crime and punishment, antitrust law and regulatory law. *Prerequisite: Economics 114 or permission of the instructor.*

128. Business Cycles and Forecasting

A study of the nature and causes of economic instability in an industrial economy.

129. Economic Development

An analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries.

130. Latin American Economic Development

An examination of the economic development of Latin American countries with particular emphasis on the relationships between economic growth and the social, political, and economic structures of these countries.

131. African Economic Development

A study of the economic development of Africa, with particular emphasis on the re-

lationships between economic growth and the social, political, and economic structures of these countries.

132. Asian Economic Development

A study of the economic development of Asian countries with particular emphasis on the relationships between economic growth and the social, political, and economic structures of these countries.

134. Growth Dynamics and Planning

A study of various theoretical growth models and their application to development, planning, and project evaluation. *Prerequisites: Economics 114 and 115.*

135. Economic Development of Japan

An analysis of the historical development of modern Japanese economy from the Meiji era to the present with an emphasis on the relationship between government, business, and labor.

140. Urban Economics

This course examines the economics of urban problems with emphasis on location and land use, the housing market, and transportation. The interaction of location and land use decisions with the housing market and the transportation system is analyzed with reference to the amelioration of urban problems. *Prerequisite: Economics 114 or permission of the instructor.*

142. Economics of Natural Resources

This course will explore the supply of, and demand for, energy from national and international perspectives. The relationship between energy use, economic growth, and the environment will be investigated. *Prerequisites: Economics 1 and 2.*

150. Labor Economics

A study of labor productivity, incomes, and employment and how these are affected by labor organizations and labor legislation.

161. The Economics of Poverty

A study of the economic conditions that lead to poverty and possible alternative policies directed at modifying such conditions.

170. Mathematical Economics I

In this course many familiar micro- and macroeconomic models are generalized and reformulated as mathematical systems. Attention is focused on exploring the properties of these models using mathematical techniques. Emphasis is primarily on static models. *Prerequisites: Mathematics 11 and 12, Economics 114 and 115, or consent of instructor.*

171. Mathematical Economics II

Analysis of dynamic economic models. Differential and difference equations are used to explore economic growth, technological change, and other types in both macro- and microeconomics. Selected topics from the economics of uncertainty are also discussed. *Prerequisites: Mathematics 11 and 12, Economics 114 and 115, or consent of instructor.*

173. Econometrics I

A course that provides the student with methods to analyze economic data. Topics such as time series data, index numbers, hypothesis testing and simple regression will be covered. *Prerequisite: Economics 55.*

174. Statistical Analysis

A course designed to acquaint the student with the foundations of statistical research methods. Topics include distribution theory, estimation, testing, and prediction, with special emphasis on multivariate models. *Prerequisites: Mathematics 11 and 12 or equivalent.*

177. Econometrics II

and test economic relationships. Focus is on regression analysis, time series problems, and estimation of multiple equation models. *Prerequisites: Economics 174 or equivalent.*

180. International Economics

An analysis of the theory of international trade, of problems in balance-of-payments adjustments, and of international economic policies. *Prerequisite: Economics 114.*

188. Economics Seminar

Modern economic theories and problems. Student admission by invitation only.

198. Independent Study

199. Internship

Opportunity for selected upper division students to work in local governmental units or firms. *Prerequisite: Upper division standing and approval of the Undergraduate Committee.*

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION DEPARTMENT OF FINANCE

Professor: Francis J. Corrigan
Associate Professors: Charles P. Harper, Wayne Y. Lee, *Chair*
Assistant Professors: Diana Hancock, Edward R. Omberg, Michael A. Solt, Meir Statman.
Acting Assistant Professor: Nirvalur R. Vijayaraghavan

Requirements For Major

1. Finance 121 and 126
2. Four electives from the following: 124, 125, 127, 128, 129, 145, 150, 151, 191, 198, 199

121. Financial Management

Introduces the basic concept of valuation and the general problem of financial management, which is concerned with the allocation, acquisition and control of funds. Addresses the issues of organization, financial analysis and performance measurement, financial funds planning and forecasting, working capital management, short- and long-term financing, the estimation of cash flows and investment in fixed assets, and cost of capital.

124. Investments and Investment Institutions

Deals with the sources and demand for investment capital in security markets. The operations of these markets, the types and characteristics of alternative securities traded, and the formulation of investment goals and policies are discussed. The focus is on security analysis and valuation, trading strategies, and portfolio management. *Prerequisite: Finance 121.*

125. Financial Policy

Examines in-depth the impact of risk and diversification on asset valuation in perfect and imperfect capital markets, with emphasis on the determination of required rate of return, the evaluation of risky investment projects, the leverage and cost effects of alternative capital structures, and dividend policy. *Prerequisite: 121.*

126. Dynamics of the Financial System

Role and function of financial institutions, financial flows, interest rate structures, money, and capital markets. The implications for the formulation of business financial policy will be highlighted. *Prerequisite: Finance 121.*

127. Personal Finance

A survey course covering the various areas in personal financial planning. Topics will include personal credit and its uses; home ownership (tax effects and other advantages); basic investment media; estate planning; etc.

128. Real Estate Finance

Analytical concepts associated with the financing of real estate. Topics include market, location, and risk analysis. Modern ap-

praisal methods will be introduced. The impact of economic and environmental trends on real estate values will be stressed. *Prerequisite: Finance 121.*

129. Senior Finance Seminar

Students study and discuss selected topics in financial management, theory, and research. The selected topics will be partially determined by interests of the seminar members. Emphasis is placed on discussion of a paper and individual reading. *Prerequisites: Finance 121 and 124.*

145. Management of Financial Institutions

The general management and policies of financial institution, with emphasis placed on commercial and investment banking activities, and attention given to thrift institutions, insurance companies, and other financial intermediaries. *Prerequisite: Finance 121 and 126.*

148. Principles of Insurance

A survey course to acquaint the student with the general principles of insurance and their application to the various branches of the field. *Prerequisite: Finance 121.*

150. Life Insurance

Studies the theoretical concepts that underlie the business and the personal uses of life insurance and annuities.

151. International Finance

Examines the functioning of the international monetary system as well as the financial problems of business firms operating internationally. Topics covered include the transfer of international payments; foreign exchange rates; balance of payments; and international liquidity, and investment, financial markets, banking, and financial management. *Prerequisite: Finance 121.*

191. Internship

Opportunity for selected upper division students to work in local governmental units or firms. *Prerequisite: Upper division standing and approval of the Undergraduate Committee.*

198. Practicum

199. Directed Research/Directed Reading

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION DEPARTMENT OF MANAGEMENT

Professor: André L. Delbecq
Associate Professors: David F. Caldwell, James L. Hall, *Chair,* Joel K. Leidecker, Dennis J. Moberg, Barry Z. Posner
Assistant Professors: Jeanne M. Logsdon, Peter K. Mills, David Palmer
Adjunct Associate Professor: Jacques Delacroix

The Management Department emphasizes rigorous theory and managerial application. Courses are offered in organization behavior and design, personnel administration, and industrial relations. Additional courses on corporate policy and strategy, the social-legal environment of business, and international management provide a top-level management perspective.

Majors in Management are those who want to develop balanced general management skills or to specialize in human resource management. Students with other majors who aspire to supervisory or managerial positions will find several of the department electives useful.

Requirements For Major

1. Management 160
2. Five courses from Management 166, 167, 168, 169, 170, 171, 173, and 197.

11. Business and Society

To discuss and clarify the role of business in modern society and its relationship with the social, political, and economic environments. The course emphasizes the external environment of business and how forces are influencing the scope, functions, and objectives of business institutions. This course combines lecture, class discussion, and case analysis.

18. Legal Environment of Business I

An examination of the law of contracts, agency, sales, commercial paper, secured transactions in personal property, personal property especially as applied to business, and a general investigation of law and court systems.

20. Legal Environment of Business II

The course is designed to enable the student to recognize and appreciate legal problems incident to business transactions and have some appreciation as to how to achieve an ethical solution. Subjects covered include real property, partnerships, corporations, insurance, suretyship, and bankruptcy.

160. Organization and Management

An introduction to organiation theory and practice including areas of management operation, concepts of organization, departmental and interdepartmental relations, and behavior in organizations.

162. Business Policies and Management

A study of the interrelationship and coordination of required functional courses including accounting, finance, management, and marketing—leading to the formulation and administration of policy. Comprehensive cases make up the basic material. *Prerequisite: senior standing.*

166. Personnel Administration

A comprehensive review of the role and functions of personnel departments in business organizations, with particular emphasis on selection and placement, training and development, and compensation systems. *Prerequisite: Managment 160.*

167. Industrial Relations

This course examines a controversial topic—union-management relations. Why do employees join unions? How are organizing campaigns and elections won? What are typical negotiating behaviors and strategies? Class time will be spent in several ways including lecture/discussion, case analyses, negotiation and arbitration simulations, guest speakers. *Prerequisite: Management 160 or permission of instructor.*

168. Organizational Behavior

Concepts to foster the effective utilization of human resources within organizations. Topics include human behavior and job performance, motivation theory, interpersonal and group relationships, leadership, conflict, and change. *Prerequisite: Managment 160.*

169. Government and Business

A study of the interaction of business and government from historical and contemporary perspectives. Readings from the political economy literature as well as current works demonstrating the institutions and issues at the center of the business government interface in post-industrial society. Course includes lectures and case discussions. *Prerequisite: Management 160.*

170. International Management

This course is an overview of the issues and problems confronting managers in international work, divided into three segments: the global framework for shared production and trade, institutions by which international work is negotiated and regu-

lated, and operational structures and strategies that are used by firms and controlled by managers and government representatives. The course includes cases and provides a special understanding of nation-state benefits and controls, cultural-developmental variables, and human resource supplies and skills. *Prerequisite: Management 160.*

171. Managerial Communication

Areas covered include interpersonal, small group, and intra-organizational communication. The course will integrate theory and skill-building through reading, case analysis, and practice. *Prerequisites: Management 160 and 168.*

173. Seminar in Advanced Management

An advanced course designed to allow students the opportunity to investigate in depth special issues affecting current and future managers. The course topics and emphasis are determined by the instructor.

197. Moral Responsibility and Business Practice

This course examines issues of social justice and responsibility in terms of contemporary business policy and practice. By applying ethical theory to case situations, the student should develop skills of moral reasoning in the complex personal, social, political, economic, and technological problems faced by modern managers. The course is taught by the Dirksen Visiting Professor of Business Ethics.

198. Internship/Practicum

Opportunity for selected upper division students to work in local organizations. *Prerequisites: upper division standing and approval of the Undergraduate Committee.*

199. Directed Reading/Directed Research

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION DEPARTMENT OF MARKETING

Professor: Albert V. Bruno
Associate Professors: Dale D. Achabal, Shelby H. McIntyre, *Chair*, J. Michael Munson, Tyzoon T. Tyebjee
Assistant Professors: Karen F.A. Fox, Moshe Handelsman
Glenn Klimek Professor: Albert V. Bruno

Marketing operates at the cutting edge of a well-managed organization. Decision-making and managerial skills are the major objectives of the Marketing Department program, with special emphasis in the areas of innovation, high technology, retailing, and consumer products.

Requirements For Major

1. Marketing 181, 183, and 189
2. Three courses from Marketing 165, 178, 179, 182, 184, 185, 187, and 191

165. Retailing Management

This course involves a study of trends in retailing and the special managerial problems of retailers. The course critically analyzes the retailing process, the environment within which it operates, and the managerial functions that are performed. Financial and merchandise strategies are examined in depth.

166. Retail Studies Program Internship

Students spend a quarter, full-time in the employ of a major retailer, usually during the fall quarter of their senior year. During the internship, they are exposed to at least two of the following areas: merchandising, personnel, store management, operations, finance, and advertising and promotion. Open only to students admitted to the Retail Studies program. *Prerequisites: Marketing 165 and 181.*

168/169. Retail Studies Seminars

These courses examine, in depth, a number of topics useful to future executives in a retailing environment. Topics include retail accounting methods, merchandise information systems, personnel and sales force management, negotiation, sales promotion and advertising, communications, merchandising, and retail strategy. *Prerequisites: Marketing 181, 165 and consent of the instructor.*

178. International Marketing

This course deals with the principles, instruments, and institutions of international marketing. The course covers international marketing issues relevant to developing foreign markets through exports, licensing, joint ventures, and multinational operations. *Prerequisite: Marketing 181.*

179. Small Business Entrepreneurship

This course is concerned with the evaluation of venture ideas and the conversion of these ideas into viable ventures. Class time is devoted about equally to a discussion of cases, lectures, and presentations by guest lecturers who have had experience relating to the starting of new enterprises (e.g., bankers, attorneys, entrepreneurs). Each member of the class is asked to develop a five-year business plan for a new enterprise as part of the course. *Prerequisite: Senior standing.* Student must have a knowledge of accounting and finance.

181. Principles of Marketing

This course explores the role of marketing in society, discusses marketing institutions, and analyzes the critical position of marketing in business strategy. The course also deals with the analysis, planning and control of the marketing function. Cases are used to present students with opportunity to apply basic principles.

182. Marketing Management and Strategy

This course deals with the concepts of marketing strategy and planning. The student is to apply these concepts to case problems and a research project. *Prerequisites: Marketing 181 and senior standing.*

183. Buyer Behavior

This course focuses on how consumers process information and make buying decisions. The influence of specific factors (such as personality, culture, social class, motivation, perception, family, reference groups) on consumer decision making is investigated. Decision processes of industrial buyers are also studied and compared to those of nonindustrial buyers. Particular emphasis is given to how an understanding of the consumer decision-making process can be applied to the development of sound marketing strategy. *Prerequisite: Marketing 181 or consent of instructor.*

184. Advertising and Promotion

A study of the role of advertising in marketing. Major topics include the communication process, the definition of advertising objectives, strategy formulation, budgeting, media selection, copy testing, evaluating advertising results, and regulation. Student groups are required to develop and competitively present a comprehensive marketing plan, including a complete advertising campaign for a consumer product. *Prerequisite: Marketing 181.*

185. Sales Management

This course is concerned with managing the sales function. It incorporates current management and quantitative techniques together with concepts from the behavioral sciences. The various duties of the sales manager are studied in detail, but particular emphasis is placed on the integrative nature of the tasks. Making decisions within a simulated sales environment is an integral part of the course. *Prerequisite: Marketing 181.*

186. Principles of Agricultural Products

A study of the American agricultural sector with emphasis on California: problems of production; comparative advantage of Western farm products on domestic and international markets; American contributions to world food supply. *Prerequisite: Marketing 181.*

187. Brand/Product Management

Students become heavily involved with dynamic decision making. The focus of the course is a brand management game. Students are grouped into brand teams and make inferences about the business environment. The brand management team must decide on what products to offer, what price to charge, how many salesmen to employ, and how much to budget for advertising. In addition, production and marketing research decisions must be made. Key emphasis is placed on the writing and presentation of the brand plan. *Prerequisite: Marketing 181.*

189. Marketing Research

A study of the application of marketing research methodology to the solution of business problems. The course addresses the role of marketing research, its design, execution, analysis, and implementation and includes field projects. *Prerequisite: Marketing 181.*

191. Internship

Opportunity for selected upper division students to work in local governmental units or firms. *Prerequisites: upper division standing and approval of the Undergraduate Committee.*

198. Practicum

199. Directed Reading/Directed Research

SCHOOL OF ENGINEERING

The School of Engineering provides knowledge of the mathematical and natural sciences, to prepare students to develop and use technology for the benefit of mankind.

The School of Engineering confers a Bachelor of Science degree in Civil Engineering, Computer Science, Electrical Engineering, Engineering, and Mechanical Engineering. The program of study for the degree of Bachelor of Science includes courses that fulfill the goals of the University curriculum, School of Engineering curriculum, and the Engineering departmental major curriculum.

BACHELOR OF SCIENCE. The program leading to a degree of Bachelor of Science consists of a minimum of 180 quarter units with a grade point average of at least a C (2.0) in all course work at the University and in the student's engineering courses. Students must declare a major as a condition of registering for the junior year.

For the Bachelor of Science degree, students must fulfill the following University requirements.

1. Composition and Literature
   Two courses, normally English 1 and 2
2. Western Culture
   Two courses in one of the following sequences: (a) English 11, 12 and 13; or (b) History 11, 12 and 13; or (c) Philosophy 11, 12 and 13; or (d) Art History 11, 12 & 13. The two courses in Western Culture should normally be taken in sequence.
3. Foreign Language
   Recommended proficiency in one foreign language, which may be achieved in high school
4. Social Sciences
   Two courses from the offerings in the departments of Anthropology and Sociology, Economics, Political Science, or Psychology
5. Mathematics and Natural Sciences
   Particular course requirements are in the respective departmental major description.
6. Ethics
   One course in general or applied ethics from the ethics offerings in the Department of Philosophy.
7. Religious Studies
   Three courses in Religious Studies: (a) two courses, normally taken during the Freshman and Sophomore years—one Introductory Level Religious Studies course and one Intermediate Level Religious Studies course and (b) one Advanced Level Religious Studies course, taken after completing 88 quarter units. These courses are to be taken in sequence.

Students must fulfill the following school and major requirements for a *Bachelor of Science Degree in Civil Engineering.*

1. Mathematics 11, 12, 13, 21, 22 (or Applied Mathematics 106), and Applied Mathematics 108

2. Chemistry 1 and 2
3. Physics 4, 5 and 6
4. Engineering 3, 10, 41, 42, 43, 101, 103, 120, and 121
5. Civil Engineering 10, 20, 115, 121, 130, 131, 135, 140, 141, and 145
6. Technical electives: Two courses from the following: CE 118, 125, 133, 137, 138, 139, 143, 148
7. Free electives: Two courses.
8. Senior thesis: Civil Engineering 199

Students must fulfill the following school and major requirements for a *Bachelor of Science Degree in Computer Science.*

1. Mathematics 11, 12, 13, 21, 22 (or Applied Mathematics 106), 51, and 163
2. Chemistry 1 and 2
3. Physics 4, 5, and 6
4. Engineering 41, 42, 101, 102, 120, and 121
5. Electrical Engineering and Computer Science (EECS) 15, 16, 22, 121, 122, 124, 170, and 177
6. Electives from EECS (two courses) 108, 111, 112, 114, 131, 132, 133, 141, 151, 152, 153, 161, and 162

NOTE: 111 is a prerequisite for most of the upper division courses.

7. Technical Electives (three courses) chosen from a department course or an adviser-approved course from the Engineering, Mathematics, or Physical Science departments
8. Free electives (three courses)
9. Senior thesis: EECS 199

Students must fulfill the following school and major requirement for a *Bachelor of Science Degree in Electrical Engineering*:

1. Mathematics 11, 12, 13, 21, 22 (or Applied Mathematics 106) and one Mathematics elective
2. Chemistry 1 and 2
3. Physics 4, 5 and 6
4. Engineering 3, 10, 41, 42, 101, 102, 103, 120, and 121
5. Electrical Engineering and Computer Science (EECS) 104, 111, 121, 131, and 151
6. Electrical Engineering electives (five courses)

One of four optional programs

a. General Electrical Engineering: Physics 7, EECS 161, plus three (3) upper division EECS courses
b. Electronics: Physics 7, EECS 108, 112, 152, and 153
c. Digital Systems: Mathematics 53 (satisfies math elective), EECS 22, 124, 133, 141, and one (1) additional technical elective.

d. Networks and Systems: Applied Mathematics 118 (satisfies the mathematics elective), EECS 112, 114, 132, Mathematics 53, and one (1) additional technical elective

7. Technical elective (one course) chosen from a department course or an adviser-approved course from the Engineering, Mathematics, or Physical Sicence departments
8. Free electives (three courses)
9. Senior thesis: EECS 199

Students must fulfill the following school and major requirements for a *Bachelor of Science Degree in Engineering*.

1. Mathematics 11, 12, 13, 21, and 22 (or Applied Mathematics 106) and one Mathematics elective
2. Chemistry 1 and 2
3. Physics 4, 5, and 6
4. Engineering 3, 10, 41, 42, 43, 101, 102, 103, 120, 121; EECS 15, 16, 22, 121; Mechanical Engineering 135
5. Eight electives in an integrated program approved by the degree program adviser
6. Senior Thesis: Engineering 199

Students must fulfill the following school and major requirements for a *Bachelor of Science Degree in Mechanical Engineering*:

1. Mathematics 11, 12, 13, 21, 22 or Applied Mathematics 106 and Applied Mathematics 118 (or Applied Mathematics 108)
2. Chemistry 1 and 2
3. Physics 4, 5, and 6
4. Engineering 3, 10, 41, 42, 43, 101, 102 or 103, 120, and 121
5. Mechanical Engineering 11, 15, 110, 111, 125, 135, 140, 142, and 160
6. Technical electives (two courses) chosen from a department course or an adviser-approved course from the Engineering, Mathematics, or Physical Science departments
7. Free electives (three courses)
8. Senior thesis: Mechanical Engineering 199

Engineering Honor Code

The Engineering Honor Code is a long-standing Santa Clara tradition. Instituted on the request of the engineering students, the code states: *"All students taking courses in the School of Engineering agree, individually and collectively, that they will not give or receive unpermitted aid in examinations or other course work that is to be used by the instructor as the basis of grading."* Students and teachers cooperate and share responsibilities under the code. *Teachers* are responsible for making clear what aid is permissible and for using procedures that minimize temptations to violate the code. *Students* are responsible for behaving honorably, for actively ensuring that others as well as themselves uphold the code, and for being responsive to violations. *Students*

dominate the administration of the code, and they take full responsibility for trying cases of alleged violations and for recommending penalties. Alleged violations should be reported to the Engineering Honor Code Committee. More information on the code and its procedures is contained in a leaflet available from the School of Engineering and the department offices.

Facilities For Engineering

The School of Engineering's laboratories are contained in three buildings in the Sullivan Engineering Center built in 1960. Major reconstruction and renovation to existing facilities which include state-of-the-art laboratories in many fields is underway.

Civil Engineering and Engineering Mechanics Laboratories

Materials Engineering Laboratories. These laboratories include the physical testing lab, the concrete lab, and the experimental stress lab. Construction materials may be tested in tension, compression, torsion, flexure, impact and fatigue, and for hardness. Experimental stress equipment includes polariscopes, loading frames, and a variety of types of strain gages. Concrete may be designed, mixed, cast, cured, and tested in the laboratory.

Design Laboratory. The design laboratory is equipped with drafting tables, a library of standard and sample plans, manufacturer's catalogs, and other aids for civil engineering drawing and design. The department also maintains a design library, including handbooks and reference works.

Geotechnical Laboratories. Both soil and geological laboratories are equipped for demonstration work and for hands-on student participation. Extensive material and rock samples are available as are topographic, geologic, and soil maps, and reports and airphotos. Field testing and sampling equipment is available, and the standard identification, classification, compaction, and various strength tests can be performed.

Electrical Engineering and Computer Science Laboratories

Laboratories and facilities are available for research and instruction in electrical machinery, electric controls and servomechanisms, computing electrical measurements, electronics, and communications.

The Computing Laboratory includes a general purpose minicomputer and several single-board microcomputer systems networked to a development system. The laboratory has extensive microprocessor diagnostic equipment, terminals, and recording and other accessory equipment, coupled with a range of software support for these systems. These facilities are used primarily for student and faculty research, including development of new computing devices and techniques.

In addition to this computer facility within the department, the facilities of the Academic Computer Center are available for student use. Computing time is available for regularly scheduled instructional classes and for the research activities of graduate students and the Engineering faculty.

The Electronics and Communications Laboratories provide modern facilities in electronics, radio communication, and microwaves. These laboratories are equipped with signal generators, oscillators, precision bridges, oscilloscopes,

spectrum analysers, Q-meters, wave analyzers, and other precision measuring equipment.

The Control Systems Laboratory is well equipped with modern instruments for experimental studies of individual control-system components and of complete systems. In addition to the usual electronic test equipment, there is equipment for construction and test of many types of servos, oscillographic recorders, and numerous digital components.

The Electromechanical Energy Conversion Laboratory is equipped with Westinghouse generalized machines, transformers, and associated equipment.

Mechanical Engineering Laboratories

The Mechanical Engineering Laboratories contain testing facilities for instruction and experimentation in the fields of fluid mechanics, thermodynamics, heat and mass transfer, propulsion, combustion, power generation and air conditioning. A computer graphics laboratory is currently being added for instructional purposes.

A variety of internal combustion engines installed on dynamometer stands can be used for studies in diesel and spark-ignition engines. The facilities include instrumentation for evaluating engine performance and for measuring exhaust pollutants. Engine studies can be conducted using a variety of fuels.

The fluid dynamics facilities contain equipment to illustrate the principles of fluid flow and to familiarize the student with hydraulic machines and their associated instrumentation. Each device may be supplied from a pump or from a constant level standpipe with a 25-foot head. A subsonic wind tunnel equipped with an axial flow fan with adjustable blades is available to conduct experiments in aerodynamics and turbomachinery.

Included also in the Mechanical Engineering Laboratories is equipment to study electromechanical energy conversion, direct and alternating current machines, and solar energy concentrators. A metallurgy laboratory and a machine shop are available to familiarize students with properties of materials and machine tool processes. The machine shop is also used in the construction and maintenance of experimental apparatus.

Engineering School Personal Computer Facility

The Engineering School operates a personal computer lab that includes 18 Artelonics personal computers. These units consist of an Intel 8086 processor, 128K bytes of memory, dual 8-inch floppy disk drives, and a graphics display. They operate under the CP/M-86 operating system.

Academic Computer Center

The minicomputer facility of the Academic Computer Center of the University is located in the Sullivan Engineering Center. This facility operates a Digital Equipment Corporation PDP-11/34 timesharing system and an HP 2100 microprogrammable computer. Languages available include Pascal, FORTRAN, ALGOL, and BASIC.

Students also have access via terminals to the Academic Computer Center mainframe facility, which operates a Digital Equipment Corporation DEC System 2060 under the TOPS-20 operating system. Languages include Pascal, LISP, PROLOG, SNOBOL, Simula, FORTRAN, and BASIC. The Academic Computer Center personal computer facility is located in Kenna Hall. It compromises two labs with 40 IBM Personal Computers that are interconnected with file and print servers by an Ethernet local area network.

Senior Thesis

Senior students are presently required to complete a thesis (course 199 of their major). This is a four-unit effort in winter quarter. The senior thesis requirement is currently under review and may be revised by the time this year's freshmen reach that stage of their program. One consideration is a sequence of three two-unit courses throughout the year (6 units) with a preparatory two-unit course during the junior year.

The Da Vinci Program

Coordinator: Robert J. Parden, Ph.D.

This program is designed to give each student a thorough grounding in the fundamentals of engineering, physical science, mathematics, applied science, humanities, and social science. The program has two objectives: to provide the student with the background needed to select a specific engineering discipline and to prepare the student to pursue that discipline. Exceptional students (3.25 GPA or higher) may choose to work out an individual program for upper division study with an appropriate adviser. A specific discipline or individual program must be selected by the end of the sophomore year before registration for the junior year.

SCHOOL OF ENGINEERING
TECHNOLOGY AND THE QUALITY OF LIFE

It has been proposed that man is losing control of his destiny because of rapid advances in technology. Local transportation systems are inadequate, costly, inconvenient, or contribute to pollution. The computer is identified with the growing complexity of conducting our daily lives.

Technology has also strongly influenced communications, so that we are able to see and to be seen, instantly, around the world and in space. It has changed campaigning and the reporting of prices in world markets. Recreational patterns are changed by equipment and ground and air travel. Technology has an impact on every facet of life.

The impact of technology will not decrease in the future; it will accelerate.However, the nature of the impact can be altered. It will be altered as a greater number of people gain knowledge of the complex system within which technological, social, economic, and political choices take place, and the impact of one choice on the other.

NOTE: Unless designated, all courses offered by the School of Engineering earn 4 quarter units of credit.

3. Introduction to Computing

Basic computer concepts and organization; the concept of an algorithm. Discussion and examples of problem-solving techniques, programming style, and program documentation methods. FORTRAN, hands-on computer experience. Open to nonengineering students. Prerequisite: High school algebra.

4. Nonmetallic Materials

Plastic and ceramic materials are studied through the use of those materials in engineering design projects.

10. Introduction to Engineering Design

Principles of orthographic projection and descriptive geometry applied to the representation, visualization, and solution of engineering design problems.

20. Computational Geometry and Computer Graphics

The concepts used in programming computer graphics: vector and parametric representations of points, curves and surfaces; commands; curve fitting and interpolation; 2- and 3-dimensional transformations—elasticity, fluid mechanics, and heat transfer. *Prerequisities: Engineering 3 and Applied Mathematics 106.*

41. Mechanics I (Statics)

Resolution and composition of force systems and equilibrium of force systems acting on structures and mechanisms. Introduction to stress and strain analysis. *Prerequisite: Physics 4.*

42. Mechanics II (Dynamics)

Dynamics of a particle and dynamics of rigid bodies. Introduction to theory of vibrations. *Prerequisite: Mechanics I.*

43. Mechanics III (Strength of Materials)

Analysis of stresses and strains in bodies undergoing various loading conditions. Energy theorems and their applications. Laboratory. *Prerequisite: Mechanics I.*

101. Principles of Electric Circuits

The physical basis and mathematical models of circuit components and energy sources are introduced. Circuit theorems and methods of analysis are applied to D.C. and A.C. circuits. Laboratory. *Prerequisites: Mathematics 21 and Physics 5.*

102. Principles of Electronic Circuits

Introduction to electronic devices. Analysis of linear and nonlinear electronic circuits containing diodes and transistors. Operational amplifiers. Introduction to digital circuits. Laboratory. *Prerequisite: Engineering 101.*

103. Principles of Electrical Machines

Magnetic circuits, transformers. D.C. and A.C. generators and motors. *Prerequisite: Engineering 101.*

120. Fluid Mechanics I

Fluid properties and definitions. Fluid statics, forces on submerged surfaces, manometry. Streamlines and the description of flow fields. Euler's and Bernoulli's equations. Mass, momentum and energy analysis with a control volume. Laminar and turbulent flows. Losses in pipes and ducts. Dimensional analysis and similitude. Laboratory. *Prerequisite: Engineering 42 (may be taken concurrently).*

121. Thermodynamics I

Properties of pure substances. Work and heat. First and second laws of thermodynamics. Application to fixed mass systems and control volumes. Irreversibility and availability. Laboratory. *Prerequisite: Engineering 120.*

132. Engineering Economics and Management

Economic systems. Time value of money. Basic techniques of economic analysis of engineering projects. Planning and capital budgeting. Business organizations. The engineering manager.

140. Engineering Problem Solving Using Computers

Basic utilization of computers in engineering problem solving that includes word processing, electronic spread sheets, numerical integration of conservation equations to solve complex engineering problems, an introduction to computer graphics (CAD/CAM), and data acquisition. *Prerequisite: Engineering 3*

141. Finite Element Theory

The variational basis for the governing equations; Galerkin's method; elements and interpolating functions. Applications to general field problems—elasticity, fluid mechanics, and heat transfer. *Prerequisities: Engineering 3 and Applied Mathematics 106.*

142. Finite Element Applications

A continuation of Engineering 141, which is a prerequisite.

190. Independent Research

For those enrolled in the da Vinci program.

198. Off-Campus Internship

Open to juniors during their spring term. The student spends the entire term off campus as an intern in a governmental agency, industry, or organization of the student's choice. Written and oral presentation required.

199. Directed Reading/Directed Research Senior Thesis.

SCHOOL OF ENGINEERING
APPLIED MATHEMATICS

Professor: Gerald Markle, *Chair*

With the exceptions of the three courses below, the Applied Mathematics Program is designed for graduate study. A complete listing of the offerings may be found in the School of Engineering Graduate Programs Bulletin.

106. Differential Equations

First-order linear differential equations, systems of linear differential equations, homogeneous systems of linear differential equations with constant coefficients, the Laplace transform, the solution of differential equations by Laplace transform. *Prerequisite: Mathematics 21.*

108. Probability and Statistics

Definitions of probability, sets, sample spaces, conditional and total probabilty, random variables, distributions, functions of random variables, sampling, estimation of parameters, testing hypotheses.

118. Numerical Methods

Numerical solution of algebraic and transcendental equations, finite differences, numerical differentiation and integration, and solution of ordinary differential equations. Solution of representative problems on the digital computer. Fourier series. *Prerequisite: ability to program in some computer language.*

SCHOOL OF ENGINEERING
CIVIL ENGINEERING AND ENGINEERING MECHANICS

Associate Professors: E. John Finnemore, Harold M. Tapay, Daniel W. Urish
Assistant Professor: Joseph J. Fedock, *Chair*

Civil Engineering encompasses the fields of Water Resources Engineering, Transportation Engineering, Structural Engineering, Public Works Engineering,

Geotechnical Engineering, Construction Engineering, and Engineering Mechanics.

Water Resources Engineering deals with the utilization and conservation of surface and ground waters, water supply and distribution, sewage collection and disposal treatment methods, and flood control and irrigation.

Transportation Engineering is related to the planning, design, and operation of highways, airports, railways, waterways, and specialized facilities such as tunnels, canals, and harbors.

Structural Engineering involves planning and design of such structures as bridges, industrial and commercial buildings, and various special purpose structures.

Public Works Engineering applies the principles of engineering design and management to streets, sewers and drainage, water supply, structures, solid wastes, transportation, and other public engineering functions.

Geotechnical Engineering concerns the nature and use of earth media as engineering materials in the analysis, design, construction, and maintenance of foundations, retaining walls, subsurface facilities, and other engineering works.

Construction Engineering pertains to the planning, scheduling, construction and financing of civil engineering related projects.

The field of *Engineering Mechanics* relates to solid body mechanics, namely statics and dynamics of rigid bodies and mechanics of deformable bodies.

Civil engineering students, by careful choice and scheduling of electives in consultation with an adviser, are able to develop a specialized program in a desired field of civil engineering, in addition to the courses required of all civil engineering graduates.

Additionally, the civil engineering senior may spend an entire quarter in a public or private engineering office as an intern, learning the functions of that example of civil engineering practice.

10. Surveying

Survey instruments—their use, and care. Principles of topographic mapping, linear measurements, leveling, traverses, curves, boundary and public surveys. Field practice.

20. Geology

Development and formation of geologic materials. Significance of structure, land form, erosion, deposition. Stream and shoreline processes. Surface water. Laboratory. *Prerequisite: sophomore standing.*

50. Civil Engineering Design Procedures

Applications of engineering drafting techniques and procedures to civil engineering design, plans, graphs, and illustrations. Design laboratory. Completion of Civil Engineering 10 recommended.

115. Materials Engineering

Origin, manufacture, and processing of materials used in civil engineering. Physical properties of metals, wood, plastics, cement, concrete, and other engineering materials. Corrosion and its prevention. Fire resistance, heat transmission. Laboratory.

118. Construction Engineering I

Construction management. Licensing. Drawings and specifications. Cost analysis, estimating and bidding. Contracts. Bonds. Financing. Insurance. Labor legislation. Project planning and scheduling. *Prerequisite: junior standing.*

121. Soils Engineering

Origin, development and properties of soils. Classification of soils and applications of engineering mechanics to soil as an engineering material. Water in soils. Soil testing methods. Compaction, stabilization, consolidation, shear strength and bearing capacity. Occasional laboratories. *Prerequisites: Civil Engineering 20 and Engineering 43.*

125. Municipal Engineering Design

A design course in various aspects of civil engineering as applied in municipal (public works) practice. Maps and plats; site layout and earthwork; drainage; streets and utilities. Design laboratory. *Prerequisites: Civil Engineering 10, Engineering 120, and junior standing.*

130. Statically Determinate Structures

Member actions and displacements are found for statically determinate structures. Continuous beams, trusses, frames, and arches are considered. Deflections are computed using a variety of analytical methods. Steel design laboratory. *Prerequisite: Engineering 43.*

131. Statically Indeterminate Structures

Statically indeterminate structures are analyzed by both the flexibility and stiffness methods. Continuous beams, trusses, frames, and arches are considered. Matrix methods of structural analysis are introduced. Steel design laboratory. *Prerequisite: Civil Engineering 130.*

133. Timber and Prestressed Concrete Design

Design of timber structures and design of prestressed concrete structures. Particular attention is given to the design of main structural members. The complete design of simple structures made of both materials will be required. Occasional laboratories. *Prerequisites: Civil Engineering 130, Civil Engineering 135 and junior standing.* (May be taken for graduate credit up to 8 units.)

135. Reinforced Concrete Design

Analysis and design of reinforced concrete structural elements using the Ultimate Strength and Working Stress Methods. Design of elementary structures, e.g., one-story building, retaining walls. Laboratory. *Prerequisite: Civil Engineering 130.*

136. Advanced Concrete Design

Theory and practice of the design of bridges and other concrete structures. Design of prestressed concrete members. *Prerequisite: Civil Engineering 135.*

*137. Fundamentals of Earthquake Engineering Design**

Causes and characteristics of earthquake motions. Introduction to the dynamics of single and multi-degree-of-freedom lumped mass systems. Idealization of real structures and analysis of idealized models by time-history and response spectrum methods. Special considerations for earthquake resistant design of steel, timber, and reinforced concrete structures. *Prerequisite: Civil Engineering 131 and junior standing.* (May be taken for graduate credit up to 8 units.)

*138. Foundations Engineering**

Surveying, mapping, and foundation exploration; slope stability and settlement analysis; spread foundations; piles and caissons; earth- retaining structures; loads on underground conduits; subsurface construction. *Prerequisites: Civil Engineering 121, Civil Engineering 135 and junior standing.* (May be taken for graduate credit up to 8 units.)

139. Hydrology and Drainage

Precipitation, evaporation, transpiration, runoff, and infiltration. Drainage areas, concentration points, storage, and floods. Stream-flow hydrographs and routing. Street, highway, and airport drainage. Occasional laboratories. *Prerequisite: Engineering 120 and junior standing.*

140. Water Resources Engineering

Concepts of various aspects of water resources: storm and flood waters, ground waters, water supply and distribution, sewage collection and disposal, and irrigation. Interrelationship of all aspects. Importance of water resources to the total needs of the community. *Prerequisites: Civil Engineering and Engineering 120.*

* Exempted from challenge

141. Hydraulic Engineering

Principles of hydraulics; flow in pipes and pipe networks; water hammer and surge tanks; steady flow in open channels, including bends and transitions. Design of closed conduits and open channels. *Prerequisites: Engineering 120 and senior standing.*

142. Water Resources Design

Design of storage facilities, water distribution systems, storm and sanitary sewer systems, treatment plants, and swimming pools. *Prerequisite: Civil Engineering 140.*

143. Environmental Engineering

Public control of waterborne and airborne diseases; vector and weed control; pesticides; food protection. Management of solid wastes; air pollution control; water quality control. Recreational facilities and the residential environment. Planning, organizing, and managing environmental programs. *Prerequisites: Chemistry 2 or equivalent and junior standing.*

144. Environmental Planning

Physical and aesthetic features of the environment and their influences on planning. Soil, geologic, and flooding hazards. Preservation of open space and amenities. Air quality; water quality, congestion. Applications to project planning. *Prerequisite: junior or senior standing.*

145. Transportation Engineering

Transportation as a system to meet the needs of society in movement of people and goods. Interaction between transportation facilities and the community. Engineering aspects of rail, highway, air, and water carriers and routes. Modern concepts and technology. *Prerequisites: Civil Engineering 10 and senior standing.*

146. Urban and Regional Planning

Principles of city and regional planning. Organization and functioning of planning agencies. Urban and regional problems and their influence on planning. Features of general plans. *Prerequisite: junior or senior standing.*

147. Pavement Design

Paving materials. Geometric and structural design of highways. Urban street layout and details. Layout and design of airport runways, taxiways, and aprons. *Prerequisite: Civil Engineering 121 (may be taken concurrently).*

148. Construction Engineering II

Construction methods and equipment: earth moving and concrete construction. Planning and scheduling. Construction site organization. *Prerequisite: Civil Engineering 130 and junior standing.*

193. Project Design

Students investigate an approved civil engineering project. The design process, including problem formulation, analysis, preliminary design, final design, and plans is completed. Student presents results at Departmental Competition. *Prerequisite: Senior standing.*

198. Internship

An option for graduating seniors to spend an entire quarter off campus with an engineering agency. The student experiences many different aspects of work in the assigned professional office. Student presents report at departmental competition. *Prerequisites: senior standing and all nonelective engineering courses completed.* (12 units).

199. Directed Research

Investigation of an approved engineering problem and preparation of a suitable thesis. Conferences with faculty adviser are required. Student presents results of thesis at Senior Thesis Conference. *Prerequisite: senior standing.*

SCHOOL OF ENGINEERING
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Professors: Shu-Park Chan, Timothy J. Healy, *Chair*, Dragoslav D. Siljak, Raymond B. Yarbrough
Associate Professors: Ronald L. Danielson, Daniel W. Lewis, Jack A. Peterson, Cary Y. Yang
Assistant Professors: Hasan S. Al-Khatib, Ruth E. Davis, Jamal S. Izadian
Benjamin and Mae Swig Professor: Dragoslav D. Siljak

Electrical Engineering includes the design, construction, and operation of equipment for generation, transmission, and utilization of electrical energy. Electrical engineers are concerned with all phases of the electrical transmission of information such as in radio, television, and telephone. Data processing equipment and computers used by business, industry, and government are included in their major area of interest. Much of the equipment used in maintaining national security is powered and controlled by electric and electronic mechanisms.

The Computer Science degree features a balanced core program in which each student studies the engineering aspects of hardware and software as well as the underlying theory of computation. The Computer Science electives permit the students to build on this core with varying emphasis in the three areas of hardware, software, and theory of computation, depending on their interests.

The Computer Science program is supported by the facilities of the University's Academic Computer Center and the Digital Systems Laboratory. The principal computers for academic functions include the computer center's Digital Equipment Corporation DEC System 2060 and PDP-11/34 timesharing systems, Hewlett-Packard HP 2100 microprogrammable computer and a personal computer laboratory with 18 Artenics personal computers. The Digital Systems Laboratory provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. A microprocessor laboratory provides the student with hands-on experience with single board microcomputers and is supported by extensive diagnostic equipment.

15. Introduction to Computer Science I

An introduction to the fundamental concepts underlying the study of computer science. This will include a brief history of computation and computational devices; the development and importance of representations and notations; high-level algorithmic description; function, definition using conditional expressions, function application, and recursion; logic; procedural, relational, and functional programming languages; social and ethical issues.

16. Introduction to Computer Science II

A continuation of EECS 15, this course will develop and begin to apply the concepts in the area of computer software. It will include the study of a programming language as a notation for algorithms and computation as an evaluation mechanism. Students will learn to program in a modern, high-level programming language. *Prerequisite: EECS 15.*

22. Machine Organization and Programming

Assembly language programming. Introduction to computer architecture number systems and representation, memory organization, computer organization; computer arithmetic; input/output. Impact of computer hardware on software. Introduction to assembler techniques. *Prerequisites: Engineering 3 or EECS 16 or Mathematics 10.*

104. Electromagnetic Fields

Study of static and dynamic electric and magnetic fields. Dielectric and magnetic material properties. Maxwell's equations. Plane electro- magnetic waves. *Prerequisite: Engineering 101.*

105. Electromagnetic Waves

Continuation of 104. The propagation of waves as governed by Maxwell's equations are studied. Wave penetration, fundamental wave guides, and antennas are included. *Prerequisite: EECS 104.*

108. Microwave Theory and Techniques

A combined lecture and laboratory course covering generation, propagation, and detection of microwave energy. Experiments on klystrons, impedance measurements, antenna radiation patterns and the characteristics of passive microwave devices. Laboratory. *Prerequisite: EECS 104.* (May be taken for graduate credit up to 12 units.)

111. Matrix Analysis of Networks and Systems

Review of matrix algebra, elementary network topology, matrix foundation of system equations, network theorems, Laplace transform techniques, sinusoidal steady-state analysis, frequency response plots, two-port network theory, active two-port devices, state-space analysis methods, computer-aided analysis. *Prerequisite: Engineering 101.*

112. Modern Network Synthesis and Design

Design of linear and nonlinear operational amplifier circuits. Approximation. Synthesis of passive one-port and two-ports. RC active filter design. Introduction to Linear ICs: PLL and waveform generators. Design project. *Prerequisite: EECS 111.* (May be taken for graduate credit up to 12 units.)

114. Topological Analysis and Applications

Topological analysis of passive one-port and two-port networks, flowgraph techniques for the analysis of linear systems, active one-port and two-port analysis, and other engineering applications. *Prerequisite: EECS 111.* (May be taken for graduate credit up to 12 units.)

119. Current Topics in Electrical Engineering

121. Digital System Design and Analysis

Basic switching concepts. The concept of logical signals. Survey of digital logic circuits including MSI circuits. Number systems. Digital representation of information. Boolean algebra. Switching network description.

122. Computer Architecture

Overview of computer systems, CPU design, computer arithmetic, microprogramming techniques, design of main memory, memory hierarchies and management, input/output subsystem organization, interrupt handling and DMA channels. *Prerequisites: EECS 22 and 121.* (May be taken for graduate credit up to 12 units.)

124. Introduction to Microprocessors

Overview of microprocessor organization, hardware-software tradeoffs, survey of microprocessor architectures and assembly languages, LSI memory chips, memory section design, LSI I/O techniques, interrupts, DMA channels, microcomputer development systems. *Prerequisites: EECS 22 and 121.* (May be taken for graduate credit up to 12 units.)

127. Digital System Controller Design

Contemporary design of multi-input state machines using MSI and SI devices. Programmable multi-input controllers including sequential devices and multipro-

grammed controllers. *Prerequisite: EECS 121.* (May be taken for graduate credit up to 12 units.)

129. Current Topics in Computer Science

131. Linear Systems

Mathematical models: electrical, mechanical, hydraulic. Physical laws and analogues. Linearity and superposition. Systems: inputs, outputs, and initial conditions. Laplace transform transfer function; Poles and zeros. Convolution. Block-diagrams and signal flow graphs. Computer simulation. Frequency characteristics. Gain and phase. Fourier transform. Discrete signals and system. Z-transform. Notion of state. State equations and input-output descriptions. Linear transformations. System realizations. Principle of feedback. Equilibrium and stability. *Prerequisites: Applied Mathematics 106 and EECS.*

132. Systems Control

Mathematical descriptions of dynamic systems. State-space and input-output models. Controllability and observability. Minimal realizations. Linear feedback. Performance measures and sensitivity. Stability. Frequency analysis. Bode and Nyquist diagrams. Root-locus. Lead-lag compensation design. State-variable feedback and system optimization. *Prerequisite: EECS 131.* (May be taken for graduate credit up to 12 units.)

133. Digital Signal Processing

Description of discrete signals and systems. Difference equations. Convolution summation. Z-transform. Transfer function. System response. Stability. Discrete Fourier transform. Frequency characteristics. Digital filters. Pole-zero design. Butterworth filter. Fast Fourier transform. State-space description. Direct, parallel, and iterative programming. Implementation. *Prerequisite: Applied Mathematics 106.*

141. Communication Systems I

Signal description. Fourier transforms, filtering, noise description, linear modulation and demodulation, exponential modulation and demodulation, pulse modulation. *Prerequisite: EECS 131.* (May be taken for graduate credit up to 12 units.)

142. Communication Systems II

Advanced undergraduate studies in communications, emphasizing digital communications. Topics chosen from digital radio, advanced modulation techniques, and communications for computer networks. *Prerequisite: EECS 141.* (May be taken for graduate credit up to 12 units.)

151. Electronics I

Semiconductor physics. Carrier statistics and transport. Pn junctions, bipolar junction transistors, field effect transistors, metal-oxide semiconductor devices. Equivalent circuits. *Prerequisites: Engineering 102, EECS 104 and 111.*

152. Electronics II

Circuit models of devices, high and low frequency amplifiers, Multi-transistor circuits, audio amplifiers, oscillators, op-amps, digital circuits. *Prerequisite: EECS 151.* (May be taken for graduate credit up to 12 units.)

153. Electronics III

Survey of integrated circuit processes; integrated components. Monolithic linear and digital integrated circuit analysis and design. Semiconductor memories. *Prerequisite: EECS 152.* (May be taken for graduate credit up to 12 units.)

161. Electromechanical System Components

Machine dynamics, transfer function realization, and modeling of physical electromechanical systems. Introduction to power electronic systems for machine applications. Laboratory. *Prerequisite: Engineering 103.* (May be taken for graduate credit up to 12 units.)

162. Electric Power Systems

A study of systems that transmit electric energy from the point of generation to the point of use. Three phase systems. Faults. Load flows. System modeling for computer solutions. *Prerequisite: Engineering 103.* (May be taken for graduate credit up to 112 units.)

170. Data Structures

Specification, representation, and implementation of abstract data structures using a high-level programming language. Representation- independent programming; modularization; appropriate use of iteraction and recursion; analysis of programs for correctness and efficiency. Binding strategies and their impact on storage management and "first class" -ness of data types. *Prerequisites: EECS 15 and 16, or Mathematics 61.* (May be taken for graduate credit up to 12 units.)

172. Advanced Programming

This course will emphasize techniques for structured programming, leading students through the problem definition, analysis, design, implementation, and testing of programs, with every stage appropriately documented. The course will include a large (1/2 quarter) programming project. *Prerequisite: EECS 16 or Mathematics 10.* (May be taken for graduate credit up to 12 units.)

173. Logic Programming

Application of logic to problem solving and programming; logic as a language for specifications, programs, databases and queries; separation of logic and control aspects of programs; bottom-up reasoning (forward from assumptions to conclusions) and top-down reasoning (backward from goals to subgoals) applied to the task of programming. Programs will be written and run in the language PROLOG. (May be taken for graduate credit up to 12 units.)

175. Theory and Translation of Computer Languages

The theory and detailed characteristics of high-level languages to facilitate man-computer communications. Assembler algorithms; associated procedures for symbol table management and look-up, memory allocation, syntactic and semantic analysis, and code generation. Theory of formal languages. *Prerequisites: EECS 22 and 170 EECS 170 (or Mathematics 61).* (May be taken for graduate credit up to 12 units.)

177. Operating Systems

Introduction to operating systems organization. Management of memory, processors, and other system resources, deadlock problems, and avoidance. Process interaction and communication. Sharing and protection of processes and data. file structures. Implementation considerations. *Prerequisites: EECS 22 and EECS 170 (or Mathematics 61).* (May be taken for graduate credit up to 12 units.)

190. Independent Study

Open to departmental scholars only.

199. Directed Research

Investigation of an approved electrical engineering problem and preparation of a suitable thesis covering the investigation. Meetings with faculty adviser as required. Students present results of their thesis work at a Senior Thesis Conference normally held at the outset of the spring term.

SCHOOL OF ENGINEERING
MECHANICAL ENGINEERING

Professors: Kenneth E. Haughton, Richard K. Pefley, Michel A. Saad, *Chair*
Associate Professors: Eugene J. Fisher, Timothy K. Hight, R. Ian Murray
Phil and Bobbie Sanfilippo Professor: Richard K. Pefley
John M. Sobrato Professor: Kenneth E. Haughton

Mechnical Engineeering includes all aspects of design, development, control, and manufacture of mechanical systems and energy conversion systems. The undergraduate curriculum addresses itself to the education and training of Mechanical Engineering students and concentrates on two technical areas: (1) design and analysis of thermofluid systems for effective utilization of energy; (2) design and control of mechanical systems including the study of materials used in engineering. Educational efforts are channeled to expand the skills of

prospective engineers not only in understanding fundamentals but also in developing competence in analyzing engineering systems.

11. Design and Machine Tool Processes

Influence of material selection and manufacturing processes on engineering design. Laboratory.

15. Material Science

Physical basis of the electrical, mechanical, and thermal behavior of solids. Relations between structural and physical properties. Theory of dislocations, vacancies, and other defects and their effect on physical properties. Illustrations of the relationship between material selection, manufacturing processes and design. Laboratory. *Prerequisite: ME 11 and Physics 6.*

110. Machine Design I

Analytical and graphical analysis of linkages utilizing statics, dynamics, and strength of materials. Machine elements studied will include electromechanical and pneumatic-hydraulic components. *Prerequisite: ME 15, Engineering 43.*

111. Machine Design II

Continuation of Machine Design I. System analysis and synthesis will be studied, including control systems. Solutions to design problems will be critically evaluated by employing case studies. *Prerequisite: ME 110.*

112. Advanced Machine Design

Continuation of Machine Design II. Emphasis is placed on design projects. Integration of various components into a complete machine is studied. *Prerequisite: ME 111.*

113. Failure Analysis

Examination of common mechanisms of fracture, decay, and catastrophic failure in metals, plastics, and ceramics. *Prerequisite: ME 111.*

125. Thermodynamics II

Thermodynamic potentials and availability concepts. Nonreactive mixtures. Reactive mixtures with emphasis on the thermodynamics of combustion and chemical equilibrium. *Prerequisite: Engineering 121.*

135. Heat Transfer

Introduction to the concepts of conduction, convection, and radiation heat transfer, and application of these concepts to engineering problems. *Prerequisite: Engineering 121.*

136. Transportation Systems

Evaluation of various modes of transportation systems, including methods of propulsion. Economics and feasibility studies. *Prerequisite: Engineering 121.*

138. Stationary Power Systems

Energy demand and conservation, principles of power generation. Conventional present and future stationary power generating options. Environmental concerns. *Prerequisite: Engineering 121.*

140. Dynamics II

Continuation of Engineering 42. Free and forced vibrations of damped mechanical systems. Motion with rotating coordinate systems. Angular momentum of rigid bodies. Products or inertia. Gyroscopic motion. *Prerequisite: Engineering 42.*

141. Vibration and Control

Application of second-order differential equations using Laplace transforms, matrix algebra, orthogonality, normal mode theory to solve complex problems in structural vibrations and to analyze simple feedback control systems. *Prerequisite: Applied Mathematics 106.*

142. Fluid Mechanics II

Introduction to gas dynamics. Concepts of lift and drag. Mechanics of laminar and turbulent flow. Introduction to boundary-layer theory. Application to seleted topics in lubrication theory, aerodynamics, turbomachinery, and pipe networks. *Prerequisites: Engineering 120 and 121.*

145. Dynamics and Control of Physical Systems

Models of physical systems (mechanical, electrical, electromechanical, thermal, and fluid) are derived and used to develop linear feedback control systems that satisfy certain criteria such as minimum error, frequency and time response, and stability. *Prerequisite: Applied Mathematics 106.*

160. Mechanical Engineering Laboratory

Introduction to design of experiments, instrumentation, data acquisition, error analysis, and report writing. *Prerequisite: senior standing.*

190. Independent Study

Investigation of a mechanical engineering problem and presentation of the results. Arrangement with a faculty adviser is required. *Prerequisite: senior standing.*

199. Directed Research

Investigation of an engineering problem and writing an acceptable thesis. Conferences as required. *Prerequisite: senior standing in Mechanical Engineering.*

DIVISION OF COUNSELING PSYCHOLOGY AND EDUCATION

Associate Professors: Kenneth E. Blaker, Ruth E. Cook, Joyce A. Gerard, Brian P. Hall, Jerome Kroth, Jerrold L. Shapiro, Jo Ann Vasquez, *Dean,* William W. Yabroff

Assistant Professors: Joyce E. King, Dale G. Larson, Mary Anne Wakefield

Teacher Education at Santa Clara

The University of Santa Clara is accredited by the California Commission on Teacher Credentialing to train and recommend qualified candidates for teaching credentials. The teacher education programs at Santa Clara consist of the Single-Subject Credential (primarily for junior high and senior high levels), the Multi-Subject Credential (primarily for elementary teaching), a Learning Handicapped Specialist Credential, and the Administrative Services Specialist Credential. The Specialist Credentials require first obtaining a basic teaching credential.

The Basic Teaching Credential Program (multi-subject or single-subject) is generally taken at Santa Clara as a fifth-year of study following baccalaureate. If students complete all of their University and major requirements for graduation by the end of their junior year, however, they are eligible to apply for entrance to the credential program during their senior year of study. Such students must still complete the fifth year requirement to obtain a clear credential.

The minimum requirements for the basic teaching credential include:

1. A baccalaureate degree or higher degree, except in professional education, from an accredited institution;
2. A Commission approved program of professional preparation (Teacher Credential Program);
3. Completion of an approved academic waiver program in the appropriate subject area(s) for the desired credential or passage of a subject-matter examination (currently the National Teacher Exam);
4. Completion of approved coursework in the teaching of reading or passage of an approved reading examination; and
5. Beginning February 1, 1983, the Commission for Teacher Preparation and

Licensing will not issue any initial credential unless the applicant has passed the basic skills proficiency test.

Pre-Teaching Advisement

Undergraduate students who wish to enter the teaching profession are urged to attend the orientation workshop provided by the Teacher Education Program each quarter. Students who aspire to teaching should consult with their major departments and the Education Program during their undergraduate studies in order to prepare themselves for studies leading to a teaching credential.

The California Teacher Preparation and Licensing Law of 1970, commonly referred to as the Ryan Act, guides policy in teacher preparation and credentialing in the state of California.

Undergraduate Preparation for Careers in Teaching

Preparation for the Multi-Subject Credential Program: Diversified Liberal Studies Major

For details, refer to the Multidisciplinary Studies/Pre-Teaching major in the College of Arts and Sciences section of this bulletin.

Preparation for the Single-Subject Credential Program

Students interested in secondary teaching of a particular subject may fulfill the requirements of one of nine approved single-subject academic programs on campus. These subject categories include Mathematics, Biology, English, History, Chemistry, Physics, Psychology, Sociology and Anthropology, Combined Sciences, Spanish, and French. Students should indicate their interest in teaching to the appropriate adviser within their major. Students who do not complete one of the approved subject-area programs, but are interested in a teaching career, must instead pass the National Teacher Examination in the appropriate subject area(s).

The Fifth-Year Credential Program

Admission requirements for the credential program are as follows.

1. An overall grade point average of 2.75, with a 3.0 in the academic major;
2. Mental, emotional, and physical fitness;
3. A positive attitude toward the teaching profession and its responsibilities;
4. Demonstrated competence in reading, writing, and speaking English as attested to by course work and written papers;
5. Absence of criminal conviction that would preclude the issuance of a teaching credential;
6. Written letters of recommendation from the following:
   a. At least one professor from the student's major field (preferably the student's major adviser)

b. A teacher who has supervised the student's practicum work in the elementary or secondary school
c. An employer or professional colleague who is well acquainted with the student's skills in working with youth;

7. Verification of successful practicum work and/or experience with children or youth groups;
8. Interviews with both the Director of Teacher Education and another full-time faculty member;
9. A written statement, to be written at the time of the interview, that reflects the candidate's personal philosophy of education and commitment to the teaching profession;
10. Submission of recent GRE or GMAT test scores; and
11. Submission of CBEST scores (now required of applicants to teaching credential programs)

Applicants to the Credential Program may apply any time between December 1 and May 1 for admission the following September. Application forms are available in the Graduate Division Office, Bannan Hall 213.

Since the Teacher Education Program is limited in enrollment, accepted candidates must reserve a place in the program by depositing $50 before June 1. This nonrefundable deposit will be applied to the candidate's tuition.

Consult the *Division of Counseling Psychology and Education Bulletin* for a description of courses in the credential program.

98/198.01 and 98/198.02. Practica in Education 98/198.01 (elementary); 98/198.02 (secondary).

Opportunity for working as teacher aides in elementary and secondary classrooms. Weekly seminars and directed readings address field-related problems and issues, classroom dynamics and curriculum. Recommended: 112 or 119.

112. Education in an Era of Change

An analysis of the status and direction of American education in the middle decades of the twentieth century. Stress is placed on examining the nature and conditions of current school conflict and recent criticisms of the public school system. Open to sophomores.

119. Psychology of Education

Students will explore how psychological inquiry contributes to education. Topics will include human development and readiness for learning, fundamental learning processes, instructional planning, motivation and evaluation. In addition, the course examines the place of attitudes and feelings in teaching. Open to sophomores.

163. Introduction to Teaching in a Multicultural Society

Introduces the student to public school curriculum and instruction in a multicultural setting. Students are engaged in directed practica in school settings while participating in seminar sessions that focus on cultural learning styles, bilingual/crosscultural programs, components of multicultural curriculums, and other field-related problems and issues. Includes field work. Open to sophomores.

UNIVERSITY PROGRAMS

HONORS PROGRAM

George F. Giacomini, Jr., M.A., *Director*

The Honors Program enables superior students to pursue an especially challenging curriculum while majoring in any of the undergraduate departments in the University. It is not in itself a major program. The typical Honors Program student does approximately one-fourth of his course work in special Honors courses limited to about 16 students.

Most Honors courses are taken during the freshman and sophomore years; the junior and senior years are occupied principally by intensive work in the student's major department. Various Pass/Not Pass options, exemptions from course-load limitations, and registration privileges enable students in the program to design curricula suited to their abilities, preferences, and educational needs.

Criteria for admission to the Honors Program include high school academic records, Scholastic Aptitude and Achievement Test scores, letters of recommendation, and, when possible, interviews with the director of the program. A high school grade point average of 3.50 and an SAT score of 1350 (including 650 verbal score) are the ordinary minimum requirements for acceptance into the program, although acceptance does not rest on scores alone.

Approximately 30 to 40 freshmen are admitted to the program every year. To remain in the program, students must maintain a cumulative grade point average of 3.0 and satisfy the director that, in other ways too, they are doing work of Honors caliber. Toward the end of their freshman year, a few Honors Program students who have demonstrated exceptional ability are designated Honors Schoolars, are released from most of the usual college and departmental requirements, and are permitted, with the assistance of the director or other faculty advisers, to devise individual programs of study for the next three years.

The awards "Honors at Entrance" and "Acceptance with Honors," which the University awards to high school students at high school commencement ceremonies, do not constitute admission or imply that the recipient will be admitted to the University Honors Program, nor are they related to the Honors Program in any other way.

Inquiries concerning the Honors Program should be sent to the Director, University Honors Program, University of Santa Clara, Santa Clara, California 95053.

UNIVERSITY INSTITUTES

The University offers institutes that include multidisciplinary or related courses on a theme developed by faculty members from different disciplines in the College of Arts and Sciences, the School of Business and Administration, and the School of Engineering. In addition to academic courses, institutes usually include public lectures, dramatic productions, films, and social events. The University sponsored the Institute on War and Conscience and the Institute on the Family in fall 1982 and winter 1984, respectively. The Institute on Poverty and Conscience is planned for winter 1985.

STUDIES ABROAD

Richard T. Coz, S.J., M.A., *Director*

The University of Santa Clara provides opportunities for study in Europe and Asia. The University is affiliated with the Institute of European Studies with programs at Durham, London, Nantes, Paris, Madrid, Vienna, and Frieburg in Breisgau. In addition, the University is affiliated with Loyola University of Chicago in Rome, Gonzaga University in Florence, and St. Mary's College in Twickenham, near London. Santa Clara also has an international business and Asian studies program at Sophia University in Tokyo. Students receive academic credit for work done from affiliated programs. All applicants must currently be enrolled at the University. Students must have Junior status and the approval of the Director of Study Aborad for admission to these programs.

ETHNIC STUDIES

Gary Y. Okihiro, Ph.D., *Director*

The Ethnic Studies Program coordinates the ethnic studies courses offered by academic departments. Further, it assists the academic departments in developing ethnic studies courses integral to the departmental curriculum. The program offers minority students an opportunity to study and understand their own cultural heritage, and nonminority students an opportunity to understand and appreciate minority cultures in American society. Although most courses are offered in theregular departments, a number of interdisciplinary courses are offered. The program sponsors other educational activities and serves as a resource to the campus community.

20. Chicano Culture

Multidisciplinary survey of Chicano culture including the Mexican cultural heritage and traditional folk culture, Chicano world views and values, religious beliefs, the family and kinship, language, and contemporary community issues of identity, sex roles and stereotyping, immigration, housing, employment, and education.

30. Afro-American Culture

Multidisciplinary survey of Afro-American culture including the African cultural heritage and African survivals, world views and values, religious beliefs, the family and kinship, language, and contemporary community issues of identity, sex roles and stereotyping, housing, employment, and education.

40. Asian American Culture

Multidisciplinary survey of Asian American culture including the Asian cultural heritage, immigration, and the formation of Asian American culture, world views and values, religious beliefs, the family and kinship, language, and contemporary community issues of identity, sex roles and stereotyping, housing, employment, and education.

90. Racism in the United States

Multidisciplinary study of racism in the United States including its historical manifestations from the arrival of Europeans in North America to contemporary times, its psychological dimensions (prejudice, stereotypes, discrimination), and its place within the U.S. political economy (capitalism). Emphasis on Afro-Americans, but also

discussion of Native Americans, Chicanos, and Asian Americans.

120. Topics in Chicano Studies

Selected topics in Chicano studies approached from a multidisciplinary perspective.

130. Topics in Afro-American Studies

Selected topics in Afro-American studies approached from a multidisciplinary perspective.

140. Topics in Asian-American Studies

Selected topics in Asian-American studies approached from a multidisciplinary perspective.

190. Topis in Ethnic

Studies Selected topics in ethnic studies approached from a multidisciplinary perspective.

Anthropology

186. North American Indian Ethnography

The range of variation of North American Indian cultures from the Arctic to Mexico; the concept of culture area; modern reservation conditions.

English

35. Afro-American Literature

Readings in the Black literature of America.

166. Pan-African Literature

Readings in the literature of the Black diaspora, including writers from Africa, the Caribbean, and the United States. Themes include slavery, negritude, and Pan-Africanism.

History

81. Mexican Americans

A broad history of the Mexican American in California and the Southwest. Special emphasis on the period since 1848 and on Texas, New Mexico, and California.

83. Asian Americans

Historical survey of Asians in America from immigration to c. 1965. Emphasis on Chinese, Japanese, and Filipino settlements along the West Coast. Topics include comparative immigration and settlement patterns, labor, community organization, and the anti-Asian movement.

180. American Indians

A history of Native Americans from European contact to the present, with an emphasis on nineteenth-century developments.

Political Science

40. Social Forces in Politics

The impact of social movements on political change directs attention to the goals and means of women and minority movements as well as the political aspects of changing life styles.

153. Ethnic Politics

This course examines the political culture and social reality of the ethnic/racial groups in the United States. Included in this examination of the relationship of minorities to the social, political, and economic structure are interpretations of American ethnic/

race relationships, the extent and nature of ethnic power within the American political-economic structure, the effect of the policy process and social programs on ethnic minorities, and minority political movements and organizations. Focus of the course is the experience of Chicanos, Blacks, Native Americans, and Asian Americans.

Psychology

197. Advanced Seminar

Intensive focus on selected specialized topics, which vary from year to year. An Ethnic Studies seminar on minority aging is occasionally offered. *Prerequisite: permission of instructor.* NCX*

Sociology

132. Social Stratification

Analysis of the principal lines of social cleavage within American society. Focus is on the racial, sexual, ethnic, occupational, and class divisions prevalent in the contemporary world. Specific topics treated include affirmative action and reverse discrimination, IQ and race, exploitation, elites and ruling classes, under- and unemployment, poverty, the position of blue-collar and white-collar workers, the position of women in the labor force, and housework.

153. Minority Women in the United States

An examination of the economic, social, political, and cultural experiences of minority women (Chicanas, Blacks, Asian Americans, and American Indians) in the United States.

175. Race and Inequality

This course will analyze the socioeconomic and political situation of Blacks, Hispanics, Asians, and American Indians in contemporary American society and the origin and nature of the problems created by racial inequality. Topics covered include race and class; occupational and economic inequality: affirmative action policies; the history of racial discriminiation; the "culture of poverty"; cultural sterotyping; resistance to change.

Spanish

133. Mexican-American Literature

Reading, analysis, and discussion of Mexican-American literature, with emphasis on the novel and short story.

WOMEN'S STUDIES

Mary McD. Gordon, Ph.D., *Director*

The Women's Studies Program offers both men and women students opportunities to study the experiences, contributions, and cultural images of women while working toward a degree in a traditional academic discipline. The program consists chiefly of courses given by various undergraduate departments of the University.

* Exempted from challenge

The program encourages the development of new courses and of faculty research specifically concerned with women. Its office serves as a resource center for the academic community.

Departmental courses currently offered are described below.

Anthropology

90. Women and Men in Society

Anthropological approaches are used to examine the roles and statuses of women cross-culturally. The course explores a variety of factors affecting the lives of women and men as public and domestic realms of activities, political and economic factors, and family and socialization types. Comparisons are made to the situation of women and men in the U.S. to determine the origins and future in our own society.

157. Family and Kinship

The general aim of this course is to develop an understanding of the variety of ways in which kinship and family life can be organized as well as the causes of different family patterns. The course examines how and why families differ across cultures, over time, and among different groups within the United States.

Art

189. History of Women Artists

This lecture course will attempt to balance the customary approaches in the history of art with an overview of the contributions of women artists to the ongoing historical development of Western visual production.

Classics

184. Women in Antiquity

Greek and Roman women from prehistoric times through the Roman Empire, from domestic, legal, and cultural perspectives. Special attention to selected women of note. Lecture course. No prerequisite.

English

68, 69. Women's Literature

An introduction to the study of literature by and about women. Lecture course, no prerequisite.

168, 169. Women's Literature I, II

Studies in literature by and about women. Authors, genres, and themes differ from year to year.

French

182. French Feminine Literature

Study of works of outstanding French women writers from the Middle Ages to the present time (Marie de France, Madame de Lafayette, Georges Sand, Colette, Marguerite Duras, Simone de Beauvoir).

Ethnic Studies

190. Minority Women in the United States

An examination of the historical and socio-political experiences of minority women (Chicanos, Blacks, Native Americans, and Asian women) in the United States. An analysis will be made of the economic, social, political, and cultural role of minority women within American society from an interdisciplinary perspective. The course will provide an historical context for the study of minority women as a background linkage to contemporary issues. Such issues will include: self-images of womanhood, sex roles and sexism, labor force participation, the impact of social class on race and gender, feminism and minority women, and the interface between minority women and Third World women. Emphasis will also be given to an examination of the literary and artistic expressions produced by minority women.

History

84. Women in American Society

An historical survey from the Puritan era to the present. The course emphasizes class, race, and ethnic origins and examines the changing cultural images and experiences of American women.

102. Women in Europe

A survey of the social relationship between the sexes, including the daily lives of women in pre-industrial and industrial society, attitudes toward women in Western thought, feminism, and nineteenth-century women's movements.

103. Women in Asia

Gender as an historical category in analyzing the impact of change in East Asia from the traditional to the modern period. Changing roles and status of women under industrialization, intellectual development, and legal reform.

150. Women in Islamic and African Societies

A comparative analysis of the legal position of women and their social, economic, and political roles in different African and Middle Eastern cultural settings.

198. History Seminars

Occasional seminars offered in women's history.

Philosophy

109. Philosophy and the Sexes

Philosophical examination of theories of sex differences and the relationships between the sexes in the past, present, and possible future. Readings may include selections from traditional as well as contemporary sources. Lecture course.

Political Science

154. Women and Politics

An analysis of American women's political consciousness and activity, including alternative theoretical formulations of women's power, the history of American feminism, the question of race, sex, and class divisions in America, and women in cross-cultural perspective. Lecture course.

184. Seminar in American Politics I

An examination of selected topics and problems in the American political process. A seminar on Women and Public Policy is occasionally offered.

Psychology

36. Sex Roles and Psychology

The impact being male or female has on individual lives in relation to social institutions. Topics include sex differences, development of sex roles in childhood, theories about the origin of sex differences and sex roles in the family, the business world, and the clinical world.

Religious Studies

25. Women and Religion

An investigation of the role of women in the religious traditions of East and West. A study of the concept of feminine and masculine symbolism in matriarchal and patriarchal social structures. Lecture course.

SPECIAL PROGRAMS

INTERNATIONAL BUSINESS STUDIES

Barbara Molony, Ph.D., *Co-director*
Tyzoon Tyebjee, Ph.D., *Co-director*

The International Business Studies Program is designed to educate students in a broad range of management and international business skills and offer them an understanding of the culture, history, and politics of a selected geographic area. Students must select one of three geographic specializations currently offered: Western Europe, Latin America, or East Asia.

The program is open to all undergraduates in the College of Arts and Sciences or the School of Business and Administration. Students may be admitted with approval of the program directors. Students entering the International Business Studies Program continue to major in their field of interest and will receive their bachelor's degree in that field. Normally, students formally enter the program after their freshman year, but they should seek counseling from the program directors early in their freshman year.

The program requires that students be proficient in a foreign language of their selected area. The requirement may be met either by passing an advanced exam administered by the Modern Languages Department or by completing the advanced level course series (101 level in most cases). Proficiency in languages other than those offered by the University is acceptable only with approval of the program directors.

To develop a familiarity with the social, political, and economic institutions prevalent in their selected area, students will take several courses in modern history, politics, anthropology, and contemporary culture. These courses must be selected from a list developed by the program directors for each geographic concentration.

Excellence in management requires familiarity with all dimensions of business and managerial life. Students develop this competence in required courses in accounting, economics, finance, marketing, and management. Students are also required to take a series of courses in international management, international marketing, and international economics, which focus on current practices and institutions of international trade and multinational business. These courses will be supplemented by seminars and lectures by members of the international community.

Because international trade and multinational business are surrounded by a variety of ethical issues and concerns, the program requires students to take a course in business or management ethics.

The International Business Studies program directors encourage students to take advantage of the University's wide variety of programs for foreign study. With the approval of the program directors, some of the courses offered by the foreign programs may be counted toward partial fulfillment of the requirements for International Business Studies. A list of required courses may be obtained through the office for International Business Studies (120 St. Joseph's Hall) or from the program directors.

MILITARY SCIENCE

Professor of Military Science: Lieutenant Colonel Robert E. Camors, Jr.
Assistant Professors: Major Bruce A. Zorio, Major Thomas McLoud, Captain Sean M. McGinn
Senior Enlisted Instructor: Sergeant Major Fred A. Camacho

The University maintains a Senior Division of the Army Reserve Officers' Training Corps (ROTC). The program is specifically designed to give college men and women on-campus instruction and experience in the art of organizing, motivating, and leading others. It includes instruction to develop self-discipline, physical stamina, and bearing.

All courses offered by the Military Science Department are fully accredited and applicable toward fulfilling academic requirements for graduation. Through this voluntary program, the University offers all eligible students the opportunity to obtain an officer's commission in the United States Army Reserve, National Guard, or active Army, while earning their college degree.

Academic Curriculum

The Military Science core curriculum consists of six lower division classes in the ROTC Basic Course (Military Science 13,14,15,23,27,29) and seven upper division courses in the ROTC Advanced Course (Military Science 133,134,135,139,143,144,145).

Basic Course

The Basic Course, comprising the lower division courses listed above, is normally taken during the freshman and sophomore years. Students may also satisfy the Basic Course requirements by taking either Military Science 26, plus two additional classes in the Basic Course, or Military Science 28. There is no military obligation incurred for participation in Basic Course classes.

Advanced Course

The Advanced Course consists of the seven upper division courses listed above. Attendance at leadership laboratories is required, as well as satisfactory completion of a physical examination. Quarterly physical training tests are also required to remain in the Advanced Course.

Students who desire to enroll in the Advanced Course must apply and be accepted. Only those students who have satisfied ROTC Basic Course requirements and the requirements of Army Regulations are eligible. For details of eligibility, see the ROTC Enrollment Officer, Varsi Hall.

Leadership Laboratories

Leadership laboratories are required for all Advanced Course and ROTC Scholarship Cadets. Performance during lab periods is reflected in the student's course grade. Labs include activities such as rappelling, terrain navigation,

patrolling, marksmanship, drill and ceremonies, and tactical field training exercises. Other Basic Course students may attend labs on a voluntary basis.

Army ROTC Scholarship Program

Army ROTC Scholarships pay tuition, a flat rate allowance for books and supplies, and laboratory fees in addition to an allowance of $100 per month during the school year.

Scholarship recipients are expected to maintain acceptable standards of academic achievement and personal conduct. They must rank in the upper third of their Army ROTC class and continuously demonstrate leadership potential. The records of scholarship recipients will be reviewed each quarter by the Professor of Military Science to determine eligibility for continued financial assistance.

Detailed information on the scholarship program may be obtained from the Professor of Military Science at the University.

Simultaneous Membership Program

Advanced Course cadets may elect to join Reserve or National Guard units as Officer Candidates. Cadets receive pay and allowances from both ROTC and their assigned unit while at the same time gaining essential military knowledge prior to their commissioning. Cadets participating in this program can earn over $5,000 in two years.

Early Commissioning Program

Students who complete all Military Science courses prior to award of their bachelor's degree may receive their commission early if they serve in a Reserve or National Guard unit until graduation. On graduation, they may apply for active Army, Reserve, or National Guard duty.

Commissioning in the United States Army Reserve and Regular Army

Students must complete the Advanced Course to be eligible for appointment and commissioning as officers in the United States Army Reserve. Reserve commissions are tendered in all branches of the Army, except the Medical, Dental, Veterinary, Judge Advocate, and Chaplain Corps. A board of officers determines the branch in which a student is commissioned based on his or her preference, leadership potential, and academic background, and the needs of the service.

A student who receives a bachelor's degree and has been designated a Distinguished Military Graduate by the President of the University and the Professor of Military Science may, on graduation and approval of the Department of the Army, be commissioned directly in the Regular Army.

Basic Core Courses

Fundamentals of Leadership and Management

13. Introduction to ROTC (1 unit)

An introduction to the ROTC program and the structure, organization, and traditions of the U.S. Army. A broad overview of the Department of Army is given to include its role in national security.

14. Map Reading (2 units)

This course deals with fundamental principles of map reading and land navigation. The military Grid Reference System, topographic symbols, and the use of marginal information will be examined. Students will demonstrate proficiency in the following areas: locating features given a six-digit coordinate, converting grid to magnetic azimuths, and indentifying terrain features. The application of intersection, resection, and modified resection will be covered.

15. First Aid and Communications (1 unit)

The basics of life saving techniques are presented in this course. These techniques include aiding burn victims, how to stop bleeding, aid for choking victims, mouth-to-mouth resuscitation, and cardiopulmonary resuscitation.

Applied Leadership and Management

23. Weapons (1 unit)

Provides an overview of the types, capabilities, and characteristics of modern U.S. Army weaponry. Weapons from other nations will be discussed to provide a basis for comparison.

26. Basic Leadership and Management (4 units)

May be substituted for the Fundamentals and Applied Leadership and Management. For selected students who demonstrate a strong desire to go on to the Advanced Course. Covers introduction to ROTC, map reading, communications, weapons, and tactics.

27. Strategy and Tactics (2 units)

An overview of the conduct, characteristics, and implications of military operations. Various aspects of military action will be examined to include mobility operations (airborne, airmobile, amphibious), subsidiary operations, and revolutionary warfare. The principles of war will serve as threads of continuity for the course.

28. ROTC Basic Camp (4 units)

Six weeks of full-time intensive training in leadership and management conducted at Fort Knox, Kentucky (no expense to students). Course fulfills all ROTC Basic Course requirements through training received in fundamental military skills such as land navigation, drill and ceremonies, communications, reppelling, rifle marksmanship, first aid, and physical training. Taking the course does not obligate the student to military service but provides the student with exposure to life in the military. Pass/Not Pass.

29. Mountaineering (1 unit)

Introduction to operations in a mountainous environment. Equipment, nutrition, first aid, the climbing environment, and climbing fundamentals will be covered. Particular attention will be given to the approach/preparation phase of a climb.

Advanced Core Courses

Advanced Leadership and Management

133. Professionalism and Ethics (1 unit)

Course covers professionalism in today's Army and military professional ethics.

134. American Military History (2 units)

A study of American military operations in selected campaigns and geographic areas during and since the Civil War. Identifies the manner in which tactical operations support strategic and political goals.

135. Advanced Tactics (2 units)

A detailed look at Army organizations, their composition, and employment. The emphasis is on leadership and management at the platoon and company levels.

139. ROTC Advanced Camp (5 units)

Six weeks during the summer of full-time intensive training in leadership and management conducted at Fort Lewis, Washington. Students thoroughly evaluated in their ability to lead a unit and plan and conduct military operations. Attendance is normally between junior and senior years. Pass/Not Pass.

Seminar in Leadership and Management

143. Military Justice (2 units)

A detailed look at the military justice system, military law, and the rights of the individual.

144. Administration and Correspondence (2 units)

This course introduces the student to correspondence procedures within the Army. The course also covers general professional knowledge areas to include command and staff functions, the U.S. Army Logistics (supply) system, the personnel management system, and Army post and installation support.

145. Pre-Commissioning/ Preparation for Active Duty (1 unit)

Selected subjects are presented and discussed that are pertinent to the preparation of the student for commissioning and duty in the Army as a second lieutenant.

Recommended Course

90. Selected Studies in Public Policy

Study of contemporary world issues and their impact on the world political scene. Course is team taught by the Political Science and Military Science departments. Guest lecturers cover a variety of topics including the military and foreign policies of the USSR, the People's Republic of China, and other nations. The course includes an eight-hour foreign policy simulation in which students act as government decision makers in a crisis scenario.

Retail Studies

Dale D. Achabal, Ph.D. *Director*

The Retail Studies Program, offered through the Retail Management Institute, provides students with a realistic perception of the retailing industry. The program is open to undergraduates in all fields within the University. The majority of the courses in the curriculum for the program are required for Business majors. Arts and Sciences majors can use general University requirements and electives to fulfill many of the curriculum requirements.

Students entering the Retail Studies Program continue to major in their field of interest and receive their bachelor's degree in that field. Students completing the program receive a Certificate in Retail Studies.

Nonbusiness majors are encouraged to apply for admission to the program during their freshman or sophomore year to allow time to integrate their course of study in retailing with their major field requirements. Business students who have completed the lower division requirements will be able to enter the program as late as their junior year. To be admitted to the Retail Studies Program, students must complete an application that will be reviewed by the Retail Management Institute faculty and staff. Applications are available in the Retail Management Institute office, 108 St. Joesph's Hall.

The Retail Studies Program curriculum includes lower division courses in accounting, communications, computer concepts, and upper division courses in organization and management, marketing, and retailing management. A seminar and an internship are included with the upper division courses. A list of required courses may be obtained through the institute office.

Institute for Paralegal Education

Emalie M. Ortega, J.D., *Director*

The School of Law administers the Institute for Paralegal Education. The Institute offers a certificate program for persons interested in careers as paralegals in the legal profession and in law-related occupations. Certification by the Institute requires 48 quarter units of credit in paralegal education. The program may be completed in one year as a full-time student or as a part-time student over two and three years. Both daytime and evening courses are offered by the Institute. Entering certificate program students must meet certain general education requirements and should contact the director of the program prior to admission.

Students are required to take Introduction to Law, Principles of Law Practice, Summary of American Law, and Legal Research and Writing. Thereafter, they may generalize or concentrate in a major field of law. A component of specific courses provides training for paralegals interested in public-sector work. A brief internship arranged by the Institute is a recommended part of the certificate program. Limited transfer credit may be available for qualified students. The Institute is approved for veterans' benefits, and program approval is pending from the American Bar Association.

Academic Information

General Graduation Requirements

Candidates for the degree of Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) in the College of Arts and Sciences and the Bachelor of Science in Commerce (B.S.C.) in the School of Business must

1. Complete a minimum of 175 quarter units (majors in Combined Science and Engineering Physics must complete 180 quarter units)
2. Complete a minimum of 12 upper division courses, totaling at least 60 quarter units, after completing 88 quarter units
3. Attain an average of C (2.0) in both their major subject and their total course load
4. Meet the residency requirement of either (a) 45 units in the senior year or (b) 45 units in the junior year and 35 in the senior year
5. Fulfill the education requirements of the University Curriculum
6. Fulfill the minimum course requirements of both their College or School and their major department.

Candidates for the degree of Bachelor of Science (B.S.) in the School of Engineering must

1. Complete a minimum of 180 quarter units
2. Complete 45 term courses
3. Attain an average of C (2.0) in both their major subject and their total course load
4. Meet the residency requirements of either (a) 45 units in the senior year or (b) 45 units in the junior year and 35 in the senior year
5. Fulfill the educational requirements of the University Curriculum
6. Fulfill the minimum course requirements of both their College or School and their major department.

Specific course requirements to meet each of these goals are outlined in the sections for each College or School.

Honors at Graduation

The candidate for an undergraduate degree who has a grade point average between 3.45 and 3.69 graduates Cum Laude; one who has a grade point average between 3.70 and 3.89 graduates Magna Cum Laude; one who has a grade point average of 3.90 or better graduates Summa Cum Laude.

Honors will be based on all graded undergraduate courses attempted at the University of Santa Clara and elsewhere. Transfer students must complete at least two full years at the University to be eligible for honors, and no honors will be awarded above that merited by the student's record at the University of Santa Clara.

A Second Bachelor's Degree

A student may earn a second bachelor's degree. The conditions are: (1) an academic record showing a strong probability of success in this undertaking; (2) the approval of the Committee on Admissions; and (3) a projected program of study that will amass at least 45 quarter units beyond the first bachelor's degree.

Financial aid other than student loans is normally not available to students seeking a second bachelor's degree.

Registration

Registration materials must be obtained in person on the day of registration, and all forms must be completed and returned on that day. Financial arrangements for the payment of tuition and fees must be made prior to registration.

The University reserves the right to deny registration to any student for reasonable cause.

Student Classification

Students are classified by the number of quarter units they have completed with passing grades. Lower division students are considered freshmen until they have completed 43 units, and sophomores when they have completed 44 but fewer than 88 units. Upper division students are considered juniors when they have completed at least 88 but fewer than 130 units, and seniors when they have completed at least 131 units.

For academic purposes, students taking fewer than 12 units are considered part-time students. For tuition purposes, however, a part-time student is defined as a lower division student taking fewer than three (3) term courses or an upper division student taking fewer than two (2) term courses regardless of the unit value of the courses. Admission to the University as a part-time student requires approval of the Committee on Academic Status from the College or School that the student is currently attending or to which the student has applied. Six units is the minimum number of units to be considered enrolled at least half-time. Generally, students enrolled less than full-time, but at least half-time, are eligible only for Guaranteed Student Loans.

Course Numbering System

Lower division courses (numbered 1–99) are valued at 4 quarter units each, upper division courses (numbered 100–199) at 5 quarter units each. Exceptions are found in the School of Engineering (where all courses are valued at 4 quarter units) and in the departments of Music and Military Science. Consult the course descriptions in these areas for specific information.

Academic Advising

Each incoming student is assigned to a specific faculty member who serves as the student's academic adviser. The assignment is normally made according to the student's declared major or according to a general academic interest

indicated by the student. The student must declare a major by the end of the sophomore year and may also, with the permission of the appropriate dean, switch advisers if personal or academic needs warrant such a change.

Incoming students are strongly urged to secure an appointment with their academic adviser for consultation prior to registration.

Pre-Medical Academic Advising

Admission to medical school is dependent neither on any particular undergraduate concentration, nor is it guaranteed by graduation from Santa Clara. Programs that satisfy the requirements prescribed by the Council of Education of the American Medical Association are offered by several departments. Although the curriculum may be arranged in such a way that the student may comply with the requirements for entrance to medical schools in three years, medical schools generally prefer that students spend four years in preparation and include such cultural courses in their programs as will better fit them for the practice of medicine. The pre-medical advisers in conjunction with the students' own academic advisers, will assist them in preparing their programs in the major of their choice. Prospective applicants for admission to medical schools are urged to study the *Medical School Admission Requirements of U.S.A. and Canada*, which is published each year and is available from the Association of American Medical Colleges, One DuPont Circle, N.W., Washington, D.C. 20036.

Pre-Dental Academic Advising

Pre-dental programs meeting all the requirements for entrance into dental schools are offered by several departments. The pre-dental advisers, in conjunction with the students' own academic advisers, will assist them in preparing their own programs in the major of their choice. *Admission Requirements of U.S. and Canadian Dental Schools* is published each year and is available from the American Association of Dental Schools, 1625 Massachusetts Ave. N.W., Washington, D.C. 20036.

Pre-MBA Academic Advising

The College of Arts and Sciences offers a Pre-MBA Program for any of its departmental majors. In addition to the departmental major requirements, the Pre MBA student should take the following courses as college requirements or as electives.

1. Economics 1 and 2 (Principles of Economics I, II)
2. Mathematics 11 (Analytic Geometry and Calculus I)
3. Two of the following:
   a. Mathematics 12 (Analytic Geometry and Calculus II)
   b. Engineering 3 (Introduction to Computing)
   c. Management 11 (Business and Society)
   d. Accounting 1 and 2 (Fundamentals of Accounting I, II)

Pre-Law Academic Advising

There is no particular major or pre-law program required to qualify for law school. Admissions officers in the best law schools recommend undergraduate preparation in a major that requires discipline, clarity of thought, and precision in written and oral work. In addition to the college and major requirements, elective courses in English, history, speech, the social sciences, and the fundamentals of accounting provide valuable training for students intending a career in law. Early in their undergraduate careers, these students should consult their advisers, or one of the specially designated Pre-Law advisers, to formulate a program designed for their specific needs and career goals.

Student Records

The University policy relating to student records complies with the Family Educational Rights and Privacy Act of 1974 (Buckley Amendment). Accordingly, the University will release "directory information" to any person on request, unless a student requests in writing that "directory information" be held private. "Directory information" is designated as:

1. Student's name
2. Sex
3. Address (campus, local and/or permanent)
4. Telephone number
5. Date and place of birth
6. Major field of study, classification, dates of attendance, degrees, and honors received
7. Most recent previous educational institution attended
8. Participation in officially recognized activities including intercollegiate athletics
9. Name, weight, and height of participants on intercollegiate athletic teams.

During the registration period and throughout the academic year in the offices of the Registrar or of the Vice President for Student Services, students may request in writing that "directory information" be held private. Once filed, the request remains in effect only for the remainder of that academic year.

Certain types of records are excluded by law from inspection, specifically those created or maintained by a physician, psychiatrist, or psychologist in connection with the treatment or counseling of a student. A Confidential Financial Statement of the College Scholarship Service is also excluded by law from inspection. Third parties shall not have access to education records or other information pertaining to students without the written consent of the particular student about whom the information is sought.

Students may inspect their records at the following offices.

1. Official academic records, including application forms, admissions transcripts, letters of acceptance and a student's permanent Academic Record, are on file and maintained in the Registrar's Office.
2. Working academic files are also maintained by the deans in their respective offices.

3. Records related to a student's nonacademic activities are maintained in the Office of the Vice President for Student Services.
4. Records relating to a student's financial status with the University are maintained in the Office of Student Financial Services.

Complaints regarding academic records by students may be directed to the dean of the College or School in which the student is enrolled or the Registrar.

Students having questions regarding the policy on the privacy of records should contact the University Registrar (Walsh Administration Building).

Honor Societies

The University of Santa Clara is proud to host eleven prestigious national honor societies in the liberal arts, business administration, electrical engineering, history, mathematics, physics, and technical studies. These societies reflect a long tradition of academic excellence, tracing their origins back at least 50 years. Some date from the nineteenth century and one dates from the eighteenth.

Alpha Sigma Nu

Alpha Sigma Nu, the national Jesuit honor society, was founded at Marquette University in 1915. The Santa Clara chapter was installed in 1942, and there are chapters at 28 universities and colleges across the country. Alpha Sigma Nu upholds the Jesuit values of academic excellence and service to the University and community. Each year new members are selected for their commitment to excellence in scholarship and service.

Beta Gamma Sigma

Beta Gamma Sigma, the national honor society for business and administration, was founded in 1913. At present there are over 160 chapters with a total membership of more than 100,000. Members are selected from the top 10 percent of their senior class and the top 5 percent of their junior class.

Eta Kappa Nu

Eta Kappa Nu, the honor society of electrical engineering, was founded in 1904 at the University of Illinois. The Santa Clara chapter was established in 1971. There are now 135 college chapters, 9 alumni chapters, and over 130,000 members. The society recognizes academic excellence in engineering and promotes the spirit of liberal culture among its members. To be eligible for membership, students must rank among the top one-third of their graduating class in engineering.

Phi Alpha Theta

Phi Alpha Theta, the international honor society in history, was founded in 1921 at the University of Arkansas. There are now over 475 chapters in 49 states, Puerto Rico, Canada, and the Philippines. The Lamda Upsilon chapter, established at the University of Santa Clara in 1966, has been active in student

and educational programs. Members are selected on the basis of their excellence in the study and writing of history.

Phi Beta Kappa

Phi Beta Kappa, the oldest national honor society, was founded in 1776 in Williamsburg, Virginia, by students at the College of William and Mary. Then, as now, the society's purpose was to celebrate excellence in all scholarly endeavors and to encourage educational breadth, including languages, mathematics, the sciences, and humanities. There are now over 230 chapters at universities throughout the country. The Pi chapter at the University of Santa Clara was installed in 1977. Installation of a chapter indicates that the United Chapters of Phi Beta Kappa have found a university's curriculum sufficient in breadth and scholarly quality to warrant being honored by the society. Students are selected for membership on the basis of academic excellence, intensive study in a second language and college mathematics, and breadth of course work.

Phi Sigma Iota

Phi Sigma Iota, the national foreign language honor society, was founded in 1922 at Allegheny College. Beta Delta chapter was installed at the University of Santa Clara in 1982. The society recognizes remarkable ability and achievement in languages, literatures, and linguistics. It stimulates advanced work in these fields, fosters intercultural understanding, and promotes a spirit of amity between our own people and the other peoples of the world. Juniors and seniors with at least four advanced content courses completed in a qualifying language, a grade point average of 3.25 in that language, and a cumulative index of 3.0 may be eligible for membership.

Pi Mu Epsilon

Pi Mu Epsilon, the national honor society in mathematics, was incorporated in 1914 at Syracuse University. The California Eta chapter was founded in 1967 at the University of Santa Clara. Pi Mu Epsilon works to promote scholarly activity among college students. Membership requirements include an overall grade point average of 3.0 and the completion of two years of college mathematics, including calculus, with a B average.

Sigma Pi Sigma

Sigma Pi Sigma, the national physics honor society, was founded in 1921 at Davidson College, North Carolina. The society currently has more than 275 chapters and 40,000 members. The Santa Clara chapter was founded in 1969. Sigma Pi Sigma encourages a greater understanding and interest in the advanced study of physics, promotes research, and fosters the spirit of scientific inquiry. Members are selected from the upper quarter of their class and must also have a 3.2 grade point average in physics and mathematics.

Sigma Xi

Sigma XI was founded in 1886 by a group of scientists at Cornell University. The Santa Clara chapter was established in 1967. The purpose of this society is to encourage original investigation in science, both pure and applied. Students who have demonstrated an aptitude for original scientific research are eligible for associate membership. The requirements for full membership include noteworthy achievements in research as demonstrated by a doctoral dissertation, publications, or patents.

Tau Beta Pi

Tau Beta Pi, a national honor society for technical students, was founded in 1885 at Lehigh University. There are now more than 144 chapters with a total membership of over 175,000. The Santa Clara chapter was established in 1956. This organization recognizes superior scholarship and exemplary character. Members are selected from the upper fifth of the graduating class in engineering and must demonstrate personal integrity, breadth, adaptability, and unselfish activity.

Theta Alpha Kappa

Theta Alpha Kappa is the national Theology and Religious Studies Honor Society. The society, founded in 1976 at Manhattan College, is both for professors and students. The Santa Clara chapter, Alpha Phi, was granted a charter in 1981. Its main purpose is to further the study of theology and religious studies by fostering excellence in these studies. Students who have completed four courses in Religious Studies with a grade point average of 3.5 and a cumulative index of 3.0 will be eligible for admission to the society.

Awards and Prizes

Scholarships

The University awards annual scholarships to students on the basis of financial need and academic promise or special talents. For more information, refer to the Financial Aid section of this bulletin.

University Awards

Valedictorian. Established by the University in 1980, this honor is conferred annually on a graduating senior selected for outstanding academic achievement and University service as determined by the Academic Vice President and the faculty of the University.

The Nobili Medal. Established in 1976 by Joseph A. Donahue, in honor of Fr. John Nobili, S.J., founder of the University, this award is given to the male graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the Academic Vice President.

The Saint Clare Medal. Established by the University in 1968 in honor of Saint Clare of Assisi, this award is given to the female graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the Academic Vice President.

Special Awards

Community Service

The Richard J. Riordan Awards. Established in 1984 by Richard J. Riordan, these awards are given annually to four students judged outstanding in community service.

Forensics

The Ryland-Owl Prize. Established in 1897 by the Hon. Caius T. Ryland,this award is given to the winner of the annual Ryland debate. Focusing on current social and political issues, this public debate is held every spring and judged by a faculty committee.

Journalism

The Handlery Prize. Founded in 1947 by Mrs. Rose Handlery in memory of her son Raymond of the class of 1943, this prize is awarded each year by the publications committee to the graduating senior who has contributed most to the success of student publications at the University.

Awards in the Leavey School of Business and Administration

The Business Adminstration Prize. Founded in 1942, this prize is given annually by the Business Administration Association to the student who has made the greatest contribution to the Leavey School of Business and Administration.

The Isabel Jones Prize. Founded by Dr. Eliot Jones in 1956 in memory of his wife Isabel Jones, this award is given to the senior in the Leavey School of Business and Administration judged most outstanding in scholarship by the business school faculty.

The Charles J. Dirksen Prize. Founded in 1965 by Dr. Eliot Jones in honor of Charles J. Dirksen, Dean Emeritus of the business school, this prize is awarded to the junior in the Leavey School of Business and Administration judged outstanding in scholarship by the faculty.

The Professor O. Robert Anderson Award. Established in 1973, this award is given in memory of Professor O. Robert Anderson who taught accounting at the University. It is awarded annually to the Accounting major judged outstanding in scholarship by the faculty of the department.

The *Albert F. Bruno Award.* Established in 1982 in memory of Albert F. Bruno by Albert V. Bruno and family, this award is conferred annually to the outstanding marketing major on demonstration of scholarship, leadership, personal character, and career potential.

The Financial Executives Award. Established at Santa Clara in 1980, this award is given annually by the Financial Executives Institute to the senior Finance major judged outstanding in scholarship and executive potential by the Finance faculty and members of the Institute.

The Finance Award. Established at the University by the Dow Jones Corporation in 1960, this award is given to the senior Finance major with the highest scholastic average.

The Outstanding Accounting Student Award. Established in 1973, this award is to be given annually by the San Jose Chapter of the California Society of Certified Public Accountants to the senior accounting major judged outstanding in scholarship and professional career potential by a committee of the chapter.

Awards in the School of Engineering

The Edmund C. Flynn Memorial Awards. Established in 1981 by Mrs. Edmund C. Flynn in memory of her husband, these awards are given to the graduating Civil Engineering student presenting the best thesis and to the two junior Civil Engineering students with the highest scholastic average.

The Regan Memorial Award. Founded in 1977 in memory of Patrick W. Regan of the class of 1947, this award is given to the outstanding junior in Civil Engineering as determined by the faculty of the department.

Awards in the College of Arts and Sciences

Biology

The Professor Lloyd Bolton Memorial Award. This award was founded in 1973 by the alumni of the Biology Department in memory of Dr. Lloyd Bolton, first department chair in Biology, to honor the outstanding junior majoring in Biology. The selection is made by Biology alumni and based on academic excellence, outstanding accomplishments, and an autobiographical essay.

Chemistry

The Professor Joseph F. Deck Award. Established in 1973, this award is given by the Chemistry faculty to the outstanding student majoring in Chemistry who has excelled in studies and undergraduate research, extracurricular activities, leadership, and generous tutoring of fellow students, while maintaining a B average.

English

The McCann Short Story Prize. Founded in 1894 in honor of Daniel M. McCann, B.S. 1884, this award is given by the English department to the author of the best short story as determined by an annual competition.

The Shipsey Poetry Prize. Founded in 1954 by Richard W. Schmidt in honor of the late Reverend Edward Shipsey, S.J., this prize recognizes the outstanding contribution in the art of poetry as determined by an annual competition.

French

L'île de France Prize. Established in 1983 by L'île de France (Société francaise de la vallée de Santa Clara), this award is given to a most deserving French major who will study at the Institute of European Studies (either in Paris or Nantes). The recipient will be selected by the French faculty from those students already accepted into the I.E.S. program.

German

The Ruth Butzen German Friendship Prize. Established in 1981, by W. E. and Elaine Sharp, this award is given to the intermediate student who writes the best essay in German in an annual contest.

The Anna Hasselbach Rau Prize. Established in 1981, by Barbara R. Sullivan, this award is given to the advanced student submitting the best essay in German in an annual competition.

History

The Redwood Prize. An annual prize established in 1908 by the executive committee of The Redwood, this award is given to the student who writes the best essay on an historical subject as determined by the faculty of the History Department.

Italian

The Guglielmo Armanino Prize. Established in 1977 by William J. Armanino in honor of his father, this award is given annually by the faculty of the Italian Department to the outstanding Italian major, for academic excellence in the study of Italian language and culture.

The Italian Catholic Federation of Los Altos Prizes. Established in 1980, these awards are given by the faculty of the Italian Department to the students most diligent in the study of Italian language and culture.

The San Jose Civic Club Prize. Founded in 1956, this award is given by the Italian Department to the student most diligent in the study of Italian.

Mathematics

The Freshman Mathematics Prize. Established in 1958, this annual award of books is given by the faculty of the Mathematics Department to the freshman student who demonstrates excellence in mathematical study and achievement, determined by a competitive examination each spring.

The George W. Evans Memorial Prizes. Founded in 1972 by the family and friends of the late Dr. George W. Evans II, professor of mathematics at the University, these awards are given to the male and female students placing highest in the William Lowell Putnam Mathematical Competition. A third award is given to the student judged most outstanding in mathematical writing and research by a panel of mathematic's consultants.

Music

American Choral Directors Association National Choral Student Award. This award is given to a student who has been involved in continued participation in choral ensembles, has provided service to the ensemble and conductor, has demonstrated a high degree of choral proficiency and music literacy, and has contributed to the advancement of choral singing at the University.

Department of Music Certificate for Distinguished Musical Performance. Established in 1980. The faculty of the Music department may award a performer's certificate to a student demonstrating exceptional accomplishment in music, excellence in musicality, and technical proficiency.

Philosophy

The Sourisseau Prize. Founded in 1956 by Miss Eva Sourisseau in honor of her parents and family, this award is given by the Philosophy faculty to the student demonstrating outstanding achievement in the study of philosophy.

Physics

The IBM Corporation Prize. Established in 1979 by IBM, this prize is awarded to the most outstanding student in Physics for Scientists and Engineers I, II, and III as selected by the faculty who teach the sequence.

Political Science

The Michael Shallo Prize. Founded by the University in 1955 in honor of Fr. Michael Shallo, S.J., this award is given by the Political Science faculty to the student judged most proficient in political science.

Religious Studies

The Religious Studies Prize. Established in 1950 by the president of the University, this prize is given each year by the Religious Studies faculty to the student most proficient in religious studies.

Natural Science

The Orella Prize. Established in 1915 by Dr. Firmin R. Orella, B.S. 1889, and funded in 1945 by his wife Albertine S. Orella, this prize is awarded to the senior student in science who attains the highest average in scientific subjects.

Sociology and Anthropology

The Witold Krassowski Sociology/Anthropology Award. Established in 1979 by the department, alumni, and friends in honor of Professor Witold Krassowski, the first sociologist at Santa Clara, this prize is awarded by the faculty to the student in the department demonstrating exemplary research in sociology and anthropology.

Theatre Arts

The William H. Leahy Prize. Founded in 1925 in honor of Mr. William H. Leahy by his wife and his brother James, this prize is awarded to the graduating senior who has made the greatest contribution to dramatic art at Santa Clara as determined by the members of the Theatre Arts Department.

ROTC

Armed Forces Communications and Electronics Award. Established by the Department of the Army at Santa Clara in 1973, this annual award is given by the Military Science faculty to the cadet in a communications or electronics field who excels in academic achievement, demonstrated leadership potential, and meritorious contribution to the ROTC program.

Association of the U.S. Army ROTC Medal. Established by the Department of the Army of Santa Clara in 1956, this award is given by the Military Science faculty to the junior cadet judged most outstanding in meritorious academic attainment, exemplary conduct, efficiency, and fidelity.

The George C. Marshall ROTC Award. Established by the Department of the Army of Santa Clara in 1977, this award is given by the military science Faculty to the cadet judged most outstanding in military studies and Leadership.

The Medals of Santa Barbara. Established by the University in 1953, these four gold medals are awarded annually by the president of the University to the outstanding cadet in each of the four years of military training for meritorious academic achievement, exemplary conduct, efficiency, and fidelity, as determined by the Military Science faculty.

The Superior Cadet Award. Established by the Department of the Army at Santa Clara in 1958, these ribbons are given by the Military Science faculty to the cadet in each of the four years of training who consistently demonstrate potential qualities of an officer, outstanding performance of duty, and overall proficiency.

Academic Regulations

Grading System

Grades reflecting the quality of a student's work are reported as follows: A (Excellent), B (Good), C (Adequate), D (Barely Passing), F (Not Passing), P (Pass), NP (Not Pass), and I (Incomplete).

The grades A,B,C, and D may be modified by (+) or (−) suffixes, except that the grade of A may not be modified by a (+) suffix. Grade point values per unit are assigned as follows: A = 4.0; A− = 3.7; B+ = 3.3, B = 3.0; B− = 2.7; C+ = 2.3; C = 2.0; C− = 1.7; D+ = 1.3; D = 1.0; D− = 0.7; and F, I (Incomplete), P (Pass), NP (Not Pass), AUD (Audit), NR (No Grade Reported by Instructor—this notation is assigned by the Registrar's Office), and W (Withdrawn) = 0. Unit credit, but not grade-point credit, is awarded when the grade of P is assigned.

A cumulative grade point average of 2.0 or better is required for graduation. A grade point average is determined by multiplying each grade point value by

the number of quarter units assigned to the course, adding these grade point units from all courses taken, and dividing this sum by the total number of quarter units for which letter grades were reported.

Student grade reports, issued at the end of each quarter, indicate the grade point average earned during the quarter just completed as well as the cumulative grade point average the student has earned to this point.

The Pass/Not Pass Option

A junior or senior may choose to take a course on a Pass/Not Pass (P/NP) basis if the course is not required in the student's major field of study, as certified by the department chair. This choice can be made only at the time of registration or during the period of late registration.

A grade of P signifies that the quality of work done is equivalent to a letter grade of C or better, while a grade of NP denotes work at the level of C−, D, or F. Courses taken under the Pass/Not Pass option will fulfill graduation requirements but are not used in determining grade point averages.

Students may elect only one course per quarter on a Pass/Not Pass basis. A maximum of six such courses can be applied to graduation requirements.

Incompletes

A student may receive an incomplete grade (I) in a course if, because of extraordinary circumstances beyond the student's control, some essential portion of the assigned work has not been completed before the final examination. The unfinished work must be completed and given to the course instructor within three weeks of the beginning of classes in the next scheduled term, excluding the summer session. A grade must be submitted to the Office of the Registrar by the instructor no later than four weeks after the start of the term. Failure to remove an (I) within the specified time will result in a grade of F for the course. Exceptions to these regulations may be allowed, in unusual cases, by the Academic Vice President on the recommendation of the dean of the School or College in which the student is enrolled. Approval for such an exception must be obtained within the three-week period mentioned above.

Change of Grade

Only the instructor in charge of a course may assign grades. All grades, except Incompletes, become final when they have been assigned and reported to the Registrar. An instructor may approve and report to the Registrar a correction of a final grade only if a clerical or procedural error was made in the assigning, transmitting, or recording the original grade.

Course Unit Restrictions

The academic study program of students enrolled in the Leavey School of Business and Administration or the College of Arts and Sciences may not exceed 17 units per term unless they have earned a cumulative grade point average at Santa Clara of at least 3.3 or have the written permission of their academic dean

to exceed that number. Students in the School of Engineering are restricted to a maximum of four courses each term unless these same conditions are met. Exceptions will be made only for those students who are auditing a course or who have received the written permission of their academic dean to enroll in one of the 1- or 2-unit courses offered by the Departments of Music and Military Science. *NOTE:* Students who register for more than 17 units without having received prior written approval of their dean will not receive credit for the additional course or courses taken.

Lower division students may not enroll in upper division courses without the written approval of their dean. Failure to obtain this written approval will result in loss of academic credit for the upper division course or courses taken.

Challenging Courses

Students may challenge certain courses to satisfy specific subject requirements for graduation. However, units earned in this manner may neither be counted toward the total needed for graduation, nor can they be used to satisfy the residency requirements.

To challenge a course the student takes a special three- to four-hour examination on the material covered by that course and any additional requirements. All courses listed in the catalog may be challenged except those involving laboratory, studio, or specialized group work and those whose titles in the catalog are followed by the letters NCX.

In order to be eligible to challenge a course students must (1) have completed at least one term at Santa Clara, (2) have a cumulative grade point average of at least 2.2, and a grade point average of 2.5 or better in their major, and (3) have received the permission of the instructor of the course and academic dean of the School or College as indicated on the petition form available from the Office of the Registrar.

Challenge examinations are taken on the third Wednesday of each term. The petition form must be submitted to the Office of the Registrar at least two weeks prior to the examination. A fee of $50.00 is charged for each course challenged.

Challenged courses may not be taken on a P/NP basis, and no more than one course may be challenged each term.

Repetition of Courses

With the approval of the academic dean of their School or College, students may repeat a course in which they receive a grade of D or F in the first attempt. Although all courses, whether repeated or not, are included in the calculation of grade point averages, the units earned in a repeated course will not be included in the total needed for graduation.

Auditing Courses

A student may audit one course in addition to the regular study load. Permission to audit a course will be given only at the end of the late registration period, and then only if space is available in the class. Although no credit is

assigned for an audited course, the audit can be used as preparation for a challenge of that course during the following term. The successful completion of an audit will be indicated on a student's transcript by the notation AUD. A fee of $250 is charged for each course audited, and no more than three courses may be audited during a student's enrollment at Santa Clara.

Independent Study

Under certain conditions, upper division students may pursue independent study through Directed Reading, Directed Research, or Internships. To qualify, a student must have demonstrated a sufficient knowledge of the academic discipline involved to make independent study both possible and beneficial. No more than four independent study courses can be used to satisfy graduation requirements.

Students wishing to enroll in independent study courses must submit the Petition for Independent Study form, together with the required materials and approvals, to their academic dean at least one week prior to the date of registration. The forms are available from the offices of the academic deans and the Registrar.

Change in Registration

During the first week of each term, students are permitted to alter their original registration schedule by following the regular procedures established for this purpose by the Registrar. During the second, third, and fourth weeks of classes, a student may be permitted to withdraw from a class without a "W" notation appearing on the Student Record. During the fifth, sixth, seventh, and eighth weeks of classes, a student is permitted to withdraw from a class, but a "W" notation will appear on the Student Record. After the end of the eighth week of classes and up to one week before final examination, a student may withdraw from a class only with written permission of the dean. No withdrawal is permitted during the final week of classes. The form required to effect a formal withdrawal from a class is available from the Registrar's Office. Failure to file this form may result in the student's receiving a grade of F in the class.

Transfer Within the University

Students wishing to transfer from one School or College to another within the University must file a petition for admission with the dean of the School or College they wish to enter. The action taken as a result of the petition will depend on the applicant's past academic record and on the availability of space within that School or College. No student whose grade point average is less than 2.0 will be considered for transfer.

Concurrent Enrollment

Permission for concurrent enrollment at another College or University will be granted by the academic dean only for extraordinary reasons.

Attendance

Students are required to attend all classes. Penalties for absences are left to the discretion of individual instructors. Students are held accountable for all assignments in each course, whether or not the assignments were announced during an absence.

Written Examinations

Written examinations are usually given at the middle and end of each term. Grade report sheets are issued only at the end of the term. Midterm letter grades in all courses are calculated and made available to all freshmen as well as to those sophomores, juniors, and seniors whose work is deficient.

Academic Integrity

The University is committed to academic excellence and integrity. Thus, students are expected to do their own work and to cite any sources that they use. A student who is guilty of dishonest practices in an examination, paper, or other required work for a course will receive a grade of F on the assignment. In certain circumstances the student may also receive a grade of F for the course and/or be dismissed from the University.

Academic Standing

To be in good academic standing, a student must maintain a cumulative grade point average equal to or greater than 2.0 in all courses taken at Santa Clara and must have completed in excess of a minimum number of units, as specified below. Failure to meet these conditions may result in academic probation or disqualification from future registration at the University.

Academic Probation

Students who have completed at least three quarters of academic work at Santa Clara or elsewhere are subject to being placed on academic probation if their cumulative grade point average is less than 2.0 based on all courses taken at Santa Clara.

Students who have not yet completed three quarters of academic work at Santa Clara or elsewhere normally are not subject to academic probation as long as their cumulative grade point average is at least 1.6 based on all courses taken at Santa Clara.

Full-time students may also be subject to academic probation if they fail to make progress toward their degree at a reasonable rate; thus they are subject to academic probation if:

1. they have not completed at least 36, 76, 115, or 160 quarter units by the end of their third, sixth, ninth, or twelfth quarters of residency, respectively; or
2. they have completed fewer than 36 quarter units in the last three quarters of residency.

Academic Disqualification

Students are subject to disqualification from further registration at the University if:

1. they remain on probation for more than two consecutive quarters; or
2. their cumulative grade point average falls below 1.6; or
3. they complete fewer than 30, 64, 100, or 150 quarter units by the end of their third, sixth, ninth, or twelfth quarters of residency, respectively.

Reinstatement

Reinstatement after disqualification from the University is rarely permitted, and then only on the recommendation of the dean of the School or College in which the student was enrolled. It also requires favorable action by the Committee on Admissions.

Requests for reinstatement should be addressed to the Office of Admissions and must include a description of any activities engaged in during the period of disqualification that would indicate that an improved academic performance can be expected in the future. *NOTE:* Ordinarily a student may not apply for reinstatement within a year of the date of disqualification. The application will be considered only if the student's academic deficiencies can be removed within a reasonable period of time.

Withdrawing

Students who wish to withdraw from the University during a quarter must complete a withdrawal form available from the Office of the Registrar. If the formal requirements for withdrawal are met, the student's registration will be cancelled without academic penalty and a grade of W will be assigned to each course in which the student is enrolled. Students who leave the University during a quarter without formally withdrawing are subject to failing grades in all courses in which they were registered. Such students are ineligible for refund of fees.

Any student leaving the University at the conclusion of any quarter should complete the standard withdrawal forms.

The files of any student who has withdrawn from the University will be kept active for one year after the quarter of withdrawal. If during that time, students wishe to re-enroll, they must report this decision in writing to the Registrar at least four weeks prior to registration for the re-entry term. Failure to do so will result in the student's having to register during the late registration period.

Any withdrawal, either during or at the end of a quarter, will not be considered complete unless the student has met all the financial obligations at the University. Students attending the University on deferred payment plans or with National Direct Student Loans must also clear their financial obligations with the Office of Credit and Collections. Students who have unpaid University bills will not receive transcripts of credit until their account has been settled.

Student Retention

For the latest academic year, 9 percent of the full-time undergraduate students who enrolled for the fall quarter did not maintain their enrollment for the full academic year.

UNIVERSITY RELIGIOUS, SOCIAL, AND CULTURAL LIFE

Campus Ministry

The Campus Ministry staff at Santa Clara reflects the reality of the Church today—a group of lay women and men, women religious and clergy, who encourage all members of the University community to deepen their Christian commitment to "the service of faith, of which the promotion of justice is an absolute requirement." (Degree 4, 32nd General Congregation to the Society of Jesus).

To attain this end, Campus Ministry offers to the University community a variety of weekend and overnight experiences, from silent retreats to discussion and reflection sessions. Campus Ministry also sponsors guest speakers, workshops, and service opportunities in the community. Campus Ministry is responsible for the coordination and preparation of Eucharistic Celebrations in the Mission Church.

In the Christian Life Community, students acknowledge their love of God and each other through the Spiritual Exercises of St. Ignatius Loyola. In all of this, Campus Ministry is guided by the words of the prophet Micah:

"This is what the Lord asks of you,
Only this,
To act justly
To love tenderly
To walk humbly with your God."

Student Life

Participation in extracurricular activities is encouraged as part of the total development of the Santa Clara student.

The Associated Students of the University of Santa Clara (ASUSC), along with numerous student clubs, plans and administers an extensive social and cultural program.

Each student will find that the personal touch is very much a part of the Santa Clara tradition. During Freshman Orientation, for example, many upperclassmen are on hand to meet with new students and to help them with any problems they may have.

The personal approach does not end with Orientation, nor is it restricted to student relationships. Faculty seminars in residence halls lounges and informal get-togethers provide relaxing forums for discussion and enjoyment.

The following sections describe various aspects of student life and services. More detailed information is provided in the Student Handbook, which may be obtained by writing to the Office of Student Services.

Student Conduct

Through its guidelines for student behavior, the University attempts to foster and preserve a community where respect for people and property is paramount. All students are encouraged to pay special attention to the effect of their actions on others.

Student conduct is overseen on campus in three principal ways. First, a peer community council made up of students reviews behavior considered disruptive of the community spirit in the dormitories. Each residence hall has its own council. Second, the University Discipline Council—comprising representatives of the faculty, staff, and students—assumes jurisdiction over behavior deemed destructive in any way to the University. Third, if the Discipline Council recommends that a student be suspended or expelled from the University, the student has recourse to a Board of Appeals, composed of one representative each from the faculty, staff, and students.

Recommendations regarding cases of student discipline are made to the Dean of Students, who has been assigned authority for the University judicial system. In cases involving expulsion from the University, a final appeal can be made to the President of the University.

Student Housing and Residence Life

The University maintains 11 residence halls and three apartment complexes accommodating about 2,000 students. Each residence hall room is furnished with standard twin beds, desks, chairs, chests, and bookshelves. Residence halls have common bath facilities, and some student rooms have sinks. Most residence hall rooms are planned for double occupancy. The apartment complexes include one- and two-bedroom units furnished appropriately to the size and style of the apartment. Although most of the residence halls are coeducational by floor or wing, buildings are available for those students who prefer single-sex arrangements. Men and women students share lounge areas, study rooms, television and recreation rooms, kitchens, coin-operated laundry facilities, and other common services.

Professional and student staff live in campus housing, offer counseling, provide University information, and act as a liaison between students and the Office of Housing and Residence Life.

Students who wish to apply for accommodations in University housing should submit an application and contract with the required housing reservation pre-payment to the Office of Housing and Residence Life. Freshmen submitting the required contract and pre-payment by the designated deadline are guaranteed accommodations in University housing. If a housing reservation is cancelled, the pre-payment will be forfeited in accordance with the refund schedule. Upperclassmen are assigned University housing in accordance with the housing room selection and assignment process.

Requests for applications and other correspondence regarding student housing should be addressed to the Office of Housing and Residence Life.

Athletics

The University maintains a well-balanced program of intercollegiate, instructional, and intramural athletics. It is the policy of the Athletic Department that no person shall be excluded from participation or denied access to the facilities on the basis of sex.

Intercollegiate competition for men is conducted in football, basketball, baseball, tennis, water polo, golf, soccer, crew, bowling, cross-country, volleyball, and rugby. Intercollegiate competition for women is conducted in volleyball, basketball, softball, tennis, cross-country, soccer, and crew. All of these sports compete against opponents of recognized national standing.

The University is a member of the National Collegiate Athletic Association, West Coast Athletic Conference, Northern Pacific Athletic Conference, Northern California Baseball Association, Western Football Conference, California Collegiate Women's Soccer Conference, and the Pacific Soccer Conference.

Student Government

The system of student government at Santa Clara makes the students themselves responsible for the conduct of student affairs.

Students organize academic, cultural, and social activities through class government, clubs, and committees. Through the Student Senate, students promote student activity at extracurricular events on campus. Residence Hall Councils are an adjunct of student government and share with the residence hall staff the responsibility for promoting academic, religious, and social programs among resident students.

Law students have their own Student Bar Association as the instrument of student government in the School of Law. Therefore, law students are not represented on the Student Senate and are not subject to the jurisdiction of the Associated Students.

Students also participate in University-wide governance through representation on the University Community Council, and on University committees advisory to the president.

Associated Students

The Associated Students of the University of Santa Clara (ASUSC) is the official undergraduate voice of the student body. All fee-paying registered students are members, and elections are held during spring quarter.

The purposes of the ASUSC are to further the interests of the University and its students, to encourage student activities, and to provide valuable experience and training in self-government and responsibility.

Student Organizations

Students can become involved in a number of the more than 60 academic, recreational, religious, social, ethnic, and political organizations active on campus. Information on how to join an organization is available in the Student Activities Office.

Santa Clara Community Action Program

The Santa Clara Community Action Program (SCCAP) is a student-volunteer organization founded in 1966. The volunteer opportunities that it offers in schools, hospitals, special educational centers, and the local jail system provide experiences in education, law, medicine, psychology, religious studies, and sociology. This exposure is not only useful in making wise career decisions, but important in the sharing of moral values.

Debate

Santa Clara has traditionally had one of the strongest intercollegiate debate teams in the western United States. The team participates in approximately ten tournaments annually, including several out-of-state invitationals.

The program is open to participation by all students and some scholarships are available to those with previous experience in national contests. For information regarding these scholarships, contact the Office of Financial Aids.

Honor Societies

The University of Santa Clara honor societies are listed on page 182 of this bulletin.

KSCU-FM Radio

KSCU-FM is managed and operated solely by Santa Clara students. It is designed to train students in broadcasting skills and to provide the University community with music, news, sports, and public service information.

The Owl

The Owl, founded in 1869, is the University's literary magazine and the oldest college publication in the West. It invites authors from every academic area to present their works for publication. Published twice a year, the magazine includes essays, journalistic pieces, short stories, poetry, and reviews.

The Redwood

Having recently published its 80th edition, the *Redwood*, the University's student-produced yearbook, continues to record the annual story of the University. Over the years, *the Redwood* has earned a reputation for trendsetting and creativity in text, photography, layout, and graphic design.

The Santa Clara

As the weekly campus newspaper, *The Santa Clara* reports on current events, sports, entertainment, and people. Outstanding coverage and design recently earned *The Santa Clara* an award that placed it in the top sixth of the country's university papers. All students, both undergraduate and graduate, are welcome to join the staff of nearly 75 students who work in reporting, photography, graphic design, typesetting, advertising, and layout.

Student Services

Student Services offers many service centers to meet the needs of students. Each center provides a variety of programs to encourage personal growth.

Career Development and Placement Center

The Career Development and Placement Center provides a variety of services to assist students in clarifying, planning, and achieving their career goals.

A professional staff of counselors offers career counseling to individuals and groups. Workshops are held regularly on such topics as self-assessment, career planning, resume writing, interviewing, and job hunting. Programs have been developed that bring professionals from various industries to present information about career fields. A special program offers students an opportunity to speak with alumni in various careers.

The Career Development and Placement Center maintains strong contacts with employers. Job listings are available for full-time, part-time, summer, internship, temporary, and work-study jobs. Over 200 local and national employers visit campus to recruit students for career placement. An extensive file is maintained with names of contacts at employing organizations.

Black Students' Affairs Office

The Black Students' Affairs Office addresses the various needs of Black students and promotes understanding cooperation among members of the University community.

The office provides peer group counseling, arranges book loans, plans cultural programs and explores employment opportunities. The office also acts as liaison between the University and the Black community of Santa Clara and San Jose, and serves as sponsor of the Black student organization, *Igwebuike*, to promote mutual interests.

Chicano Affairs Office

The Chicano Affairs Office provides support and assistance to students who identify themselves as Chicanos or Latinos. The office provides personal counseling, cultural programs, learning assistance and community outreach programs. Many activities are sponsored in conjunction with MECHA-El Frente, the Chicano student organization.

Counseling Services and Programs

The Office of Counseling Services and Programs has a staff of professional counselors available to discuss any issues or difficulties that students may encounter. Students are welcome to set up individual appointments with counselors of their choice. No problem is too large or too small for students to avail themselves of this confidential service.

Besides the opportunity to meet with counselors on an individual basis, students are also offered a series of workshops each week throughout each quarter. Topics include Time Management, Assertiveness Training, Improving Relationships, Dealing with Stress, Eating Disorders, Dealing with Depression, and Adjusting to College Life.

Student Health Center

Health services are located in the Cowell Health Center on campus and are under the supervision of the University Physician.

Students may see the physician by appointment or for emergency drop-in services 9:00 a.m. to noon and 2:00 p.m. to 5:00 p.m. weekdays while the University is in session. Nurses are available 24 hours per day every day. There are infirmary beds for those too ill for dormitory or apartment living but not sick enough to need hospitalization.

All full-time undergraduate students and full-time law students are eligible for medical care at the Center. Graduate students and part-time undergraduate students, on payment of a minimal health service fee per quarter, are also eligible for medical care. With the exception of drugs, laboratory work, and x-rays, no fee is charged to students using the service. Extra insurance coverage for outside care or other special needs is available and recommended for all students. Inquire at the Student Health Center for information.

All full-time undergraduate and law students are required to have a pre-entrance health examination by their personal physician.

Academic Resources

Academic Support Services. Two tutorial programs provide undergraduate students with assistance in many classes. In the Drop-In Tutorial Clinic, tutors are on duty according to a regular schedule and students may receive help in specific courses without making prior appointments. Through the Individual Tutorial Program, students may arrange for personal tutoring by consulting with the Director of Academic Resources. Training in study skills, including coping with test anxiety, is available through workshops or individually. Academic Improvement Groups meet every term to improve general academic adjustment and to help students with time management, study reading, notetaking, and other study skills. Tests 'n Tension Groups help students prepare for and improve performance on different types of exams. For students who want to work on their own, there are self-paced instructional programs in comprehension, grammar, memory, spelling, notetaking, and other study skills.

International Student Services. Services for international students are provided through Academic Resources. These services include special events

and speakers, activities with the International Club, and programs such as International Friends and Host Families.

Women's Center

Established in fall 1981, the Women's Center provides support for women students as they pursue their education.

The Center maintains a library of books and periodicals on issues of special concern to women and provides a program of workshops in response to student interests and needs.

Grants and Fellowships Office

The Grants and Fellowships Office, located in the rear of the Varsi building, assists juniors, seniors, and graduate students, who plan to enter graduate or professional studies, in selecting a school and in securing financial aid. It offers counseling, conducts workshops on writing statements of purpose, maintains a collection of directories and more than 800 catalogues, and arranges campus interviews with various graduate school representatives, for example, the International Graduate School of Management and Harvard School of Government.

For national and international competitions for scholarships in which candidates must be officially nominated or endorsed by the University, the Director of the Grants and Fellowships Office, together with several members of the faculty, selects the nominees and arranges the endorsements. This office does not award fellowships, scholarships, or other financial assistance for study at Santa Clara or elsewhere.

FACILITIES

Leavey Activities Center

Leavey Activities Center is a widely used extracurricular outlet at Santa Clara. Since the construction of the Leavey Center, which has approximately two acres of recreational facilities, the intramural and recreation programs have achieved 80 percent student participation and maintained a high level of interest in competition, recreation, and social activity.

Included in the Center are the Toso Pavilion for basketball, racquetball courts, volleyball and badminton areas, swimming pool, men's and women's locker rooms, weight training section, sauna and steam rooms, and jogging track. With such facilities and activities, the Leavey Activities Center has fulfilled its design for use by students, faculty, and staff of the University. It also continues to serve as a setting for cultural and social events.

Adobe Lodge

Adobe Lodge is the oldest building on campus. Restored in 1981 to its 1822 decor, the Lodge contains a presidential dining room as well as central and private dining facilities for faculty and staff.

Benson Memorial Center

Benson Center, the hub of student life, houses many facilities including the Bookstore, the Campus Store, the Information Booth, the Food Service, the Campus Post Office, various offices, conference rooms, and recreational activities.

Classroom Buildings

Nine classroom buildings house not only some 72 classrooms but numerous administrative offices as well. Mayer Theatre and three Fine Arts buildings also provide special classroom, rehearsal, and performance facilities.

Cowell Health Center

The Cowell Health Center offers health services to students, as described on page 200, and also houses the Public Safety Office and the University Personnel Department.

Student Housing

The student residence halls and apartment complexes, described on page 196, offer students a variety in their University housing, from the close-to-campus apartment life to on-campus living. The facilities also include a snack bar, several recreational areas for dances and events, a high-rise lounge, an outdoor swimming pool, and Santa Clara's student radio station.

Michel Orradre Library

The Michel Orradre Library, with 110,000 square feet of space, has some 410,000 books and periodicals and 360,000 microforms. It is an official depository for both California state and U.S. government documents, numbering some 214,000.

The Library has an open shelf plan and is open seven days a week for a total of 106 hours.

Holdings in biology, chemistry, and physics are maintained in the Science Library in the Edward Daly Science Center.

Detailed information regarding the use of Michel Orradre Library is available in the Library Handbook published by the library staff.

Mission Santa Clara

The Mission Church marks the historic heart of the University. Adjacent to the beautiful Mission Gardens, the Church holds regular services and provides a place for quiet reflection.

de Saisset Museum

The de Saisset Museum includes American, European, African, and Oriental art, as well as historically important objects from the early days of Mission Santa

Clara. In addition to its permanent collection, it features special exhibitions of traditional, modern, and contemporary art.

Museum hours are Tuesday through Friday, 10:00 a.m. to 5:00 p.m.; Saturday and Sunday, 1:00 p.m. to 5:00 p.m.

Nobili Hall

Nobili Hall provides on-campus housing for the University's Jesuit community. The four-story facility, named for John Nobili, first president of the college, contains a dining area and a chapel.

Ricard Memorial Observatory

Named after Father Jerome S. Ricard, S.J., Santa Clara's "Padre of the Rains" who was most famous for his "sunspot theory" of weather forecasting, the Observatory now houses all of the University's audio-visual equipment.

Buck Shaw Stadium

Built in 1959 for Santa Clara's varsity football program, the 10,000-seat stadium and the surrounding practice fields are the outdoor facilities for Santa Clara's highly successful intercollegiate and intramural athletic programs.

Louis B. Mayer Theatre

The 500-seat Louis B. Mayer Theatre is designed to provide the traditional proscenium stage common to most theatres, as well as orchestra pit and thrust elevators that can be raised or lowered electrically. In a remarkably simple procedure, a wall is moved, a few seats are relocated, and the main theatre is re-oriented to a new dramatic form that extends the stage into the auditorium so that the audience surrounds the action on three sides.

The Mayer Theatre also has a special floor constructed for dance, as well as a large movie screen and film projector.

The Fess Parker Studio Theatre, housed within the Mayer Theatre complex, has no fixed stage or seating. Its "black box" design, complete with moveable catwalks, provides superb flexibility in an experimental setting.

UNIVERSITY ACCREDITATIONS AND MEMBERSHIPS

ONE HUNDRED AND THIRTY-FOURTH YEAR
1984–85

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Accredited by the American Assembly of Collegiate Schools of Business (Undergraduate and Graduate Programs)

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Member of the Conference of Western Law Schools

Member of the College Entrance Examination Board

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INDEX

A

Academic Advising, 180
  pre-dental, 180
  pre-law, 181
  pre-MBA, 180
  pre-medical, 180
Academic calendar, 5
Academic Disqualification, 194
Academic information, 178
Academic Integrity, 193
Academic Resource Center, 200
Academic Regulations, 189
Academic standing, 193
Accounting: department faculty, 132
  departmental bachelor's degree requirements, 132
  courses, 133
Accreditations, University: list of, 204
Administrators: University, 205
  of the colleges, 205
Admission: pre-entrance health examination, 200
  criteria for selection, 12
  recommended high school courses, 12
  advanced placement, 13
  foreign students, 15
  procedure for prospective freshmen, 13
  sixth-semester decision, 13
  transfer students, 14
  to honors program, 165
Advanced placement, 13
Advanced standing. See Transfer Students, 14
Advising. See Academic Advising
Anthropology: department faculty, 26
  departmental degree requirements, 26
  courses, 27
Application fee, 13
Applied Mathematics Program: department faculty, 153
  courses, 153
Art: department faculty, 34
  departmental degree requirements, 34
  courses, 34
Arts & Sciences, College of: aims and objectives, 22
  Awards, 186
  bachelor's degree requirements, 23, 24
  degrees conferred, 22
Associated Students (ASUSC), 197
Athletics: facilities, 201
  Leavey Activities Center, 201
  Program, 197
Attendance, 193
Auditing courses, 191
Awards, 184
  Special, 185
  University, 184

B

Bachelor of Combined Sciences:
  program, 52
  requirements for B.C.S. degree, 52
Bachelor's degrees: a second degree, 179
  University requirements, 23, 24
  College of Arts & Sciences requirements, 22
  School of Business and Administration requirements, 130
  School of Engineering requirements, 146
  (for departmental requirements see individual departments)
Benson Memorial Center, 202
Biology: department faculty, 38
  departmental degree requirements, 38
  courses, 39
Black Affairs Office, 199
Board of Regents, 207
Board of Trustees, 206
Business and Administration, Leavey School of:
  Awards, 185
  bachelor's degree requirements, 130
  undergraduate programs, 130
  Courses: See individual departments

C

Calendar, academic, 5
Campus Ministry, 195
Career development, 199
Challenging courses, 191
Changing courses, majors, schools or colleges, 192
Chaplain, University: counseling services, religious activities, 195
Chemistry: department faculty, 42
  departmental degree requirements, 43
  courses, 44
Chicano Affairs Office, 199
Civil Engineering and Engineering Mechanics:
  department faculty, 153
  program, 153
  courses, 154
Classics: department faculty, 46
  departmental degree requirements and, 47
  programs, 47
  courses, 48
College of Arts & Sciences. See Arts & Sciences, College of
Combined Sciences degree. See Bachelor of Combined Sciences
Communications Directory, inside cover
Computer Science: mathematics major emphasizing, 74
Computer Science. See Electrical Engineering and Computer Science
Cost. See Expenses
Counseling services, 200
  Campus Ministry, 195
Course load: minimum and maximum, 190
Course numbering system, 179
Curricula, University, 22

D

Dance. See Theatre Arts
Decision & Information Sciences:
  department faculty, 134
  departmental degree requirements, 134
  courses, 135
Degree requirements. See Bachelor's degrees
Deposits. See Expenses
De Saisset Museum, 202
Directory. See Communications
Dishonesty. See Academic Integrity
Disqualification, academic, 194
Division of Counseling Psychology and Education. See Education
Dormitories. See Housing

E

Economics: department faculty, 52, 137
  departmental degree requirements, 52, 137
  courses, 54, 137
Education, teacher: faculty, 162
  pre-teaching advisement, 163
  admission to teaching credential program, 162
  courses, 164
Electrical Engineering and Computer Science:
  department faculty, 157
  programs, 157
  courses, 157
Employment, 21
Endowed Academic Chairs, 209
Engineering, School of: aims and objectives, 146
  Awards, 186
  departmental degree requirements, 146
  honor code, 148
  Da Vinci program, 151
Engineering Mechanics. See Civil Engineering and Engineering Mechanics
  Engineering Physics. Program requirements, 100
English: department faculty, 56
  departmental degree requirements, 56
  programs, 57
  teaching credential with a major in English, 58
  courses, 60
Ethnic Studies: programs and courses, 166
Examinations, written, 193

Expenses: application fee, 16
deposits, 16
tuition, 16
fees, 16
room and board, 16
method of payment, 17
refunds, 18
tuition per course for auditing, 192
Extracurricular activities. See Student activities

F

Facilities, 201
Engineering, 149
Faculty: listed alphabetically with titles and degrees, 211
Emeriti, 209
Fees. See Expenses
Fellowships, graduate: assistance in obtaining, 201
Fifth year Credential Program, 103
Film. See Art
Finance: department faculty, 140
departmental degree requirements, 140
courses, 149
Financial Aid
scholarships, 19
applying for, 19
qualifications for, 20
tuition plans, 17
loans, 20
deferred payment plans, 21
jobs, 21
Foreign students: admission of, 15
Foreign study, 166
French. See Modern Language and Literature
Freshman: orientation, 195
classification defined, 179

G

German. See Modern Languages and Literature
Gifts to the University, 9
Grades: grading system, 189
for challenged courses, 189
for graduation honors, 178
Graduation: fee, 16
requirements, 178
honors, 178
Grants and Fellowships Office, 201
Greek. See Classics
Guaranteed Tuition Plan, 17

H

Health services: description of, 200
pre-entrance health examination, 200
History: department faculty, 64
departmental degree requirements, 64
courses, 66
History, University, 8
Holidays, academic, 5
Honors: graduation, 178
at entrance, 165
Honors Program: admission to, 165
description of, 165
Honor Societies, 182
Housing, Student: application deadline, 196
admission to, 196
room assignments, 196
deposit, 16
room furnishings, 196
cost, 16

I

Incompletes, 190
Independent Study, 192
Institute For Paralegal Eduation, 177
Institutes
International Business Studies, 165
Italian. See Modern Languages and Literature

J

Japanese. See Modern Languages and Literature
Jobs. See Employment
Junior: classification defined, 179

K-L

Language laboratory, 80
Languages. See Classics and Modern Languages

Latin. See Classics
Leavey School of Business and Administration, 130
Awards, 185
Leavey Activities Center, 201
Library: Michel Orradre, 202
Science Branch, 202
Loans: student, 20
Location: University, 10

M

Management: department faculty, 141
degree requirements, 142
courses, 142
Maps, 231
Marketing: department faculty, 143
departmental degree programs and requirements, 143
courses, 143
Mathematics: department faculty, 73
departmental degree requirements and programs, 73
courses, 75
Mayer Theatre, 203
Mechanical Engineering: department faculty, 160
departmental degree requirements, 160
courses, 161
Memberships, University: list of, 204
Michel Orradre Library. See Library
Military Science: program, 173
courses, 175
Modern Languages and Literature:
department faculty, 79
departmental degree requirements: general, 79; in French; 80; German, 82; Italian, 84; Japanese, and Spanish, 85
language laboratory, 80
courses, 81
Multidisciplinary Studies:
courses, 89
institutes, 89
pre-teaching, 88
requirements, 88
Museum. See de Saisset Museum
Music: department faculty, 89
departmental degree requirements, 90
courses, 91

N

Nondiscrimination Policy, inside cover

O

Organizations, student. See Student organizations
Orientation: freshman, 195
transfer students, 195
Overseas study: opportunities, 166
affiliated universities, 166

P-Q

Paralegal Education, 177
Part-time student: tuition, 16
classification defined, 17
Pass/Not-Pass: options, 190
Philosophy: department faculty, 95
departmental degree requirements, 95
courses, 95
Photography. See Art
Physics: department faculty, 99
departmental degree programs and requirements, 99
courses, 101
Placement Center, 199
Political Science:
department faculty, 103
departmental degree, 103
requirements and, programs, 104
courses, 106
Prizes. See Awards
Probation: academic, 193
Psychology: department faculty, 111
departmental degree requirements, 111
courses, 113

R

Recreation, 201
Refunds: of tuition, 18
of room and board, 18
Regents, Board of, 207
Reinstatement: academic, 194
Religious activities, 195
Religious Studies: department faculty, 117

departmental programs and degree requirements, 118
courses, 118
Repetition of courses, 191
Residence Life. See Housing
Residency requirement, 178
Reserve Officers Training Corps. See Military Science
Retail Studies, 177
Retention, Student, 195
Rights reserved, inside cover
Room and board. See Expenses
ROTC. See Military Science

S

Santa Clara Plan, 11
Santa Clara, University of: legal name, 9
Schedule, academic: year, terms, days of week, 11
Scholarships, 184
School of Business and Administration, Leavey, 130
School of Engineering, 146
Sciences, Arts &, College of: aims and objectives, 22
programs, 22
bachelor's degree requirements, 23, 24
academic information, 24
degrees offered, 22
Senior: classification defined, 179
Sociology: department faculty, 26
departmental degree requirements, 26
courses, 30
Sophomore: classification defined, 179
Spanish. See Modern Languages and Literature
Statement of Purpose: University, 7
College of Arts & Sciences, 22
School of Business and Administration, 130
School of Engineering, 146
Student conduct, 196
Student Services, 199
Student activities, 195
Student government: Student Senate, 197
Associated Students (ASUSC), 197
Student Health Center. See Health services
Student Housing. See Housing
Student Organizations, 198
Student Records, 181
Student Retention, 195
Student Union: Benson Memorial Center, 202
Studies Abroad, 166
Summer Session, 11

T

Teaching credential program: admission to, 162
Technology and Modern Life: departmental degree, 151
requirements and program, 152
courses, 152
Television courses. See Theatre Arts
Television facility, 125
Theatre Arts: department faculty, 124
departmental degree requirements and
programs, 124
courses, 126
Theatre production programs, 126
Transcript fee, 14
Transfer students:
pre-entrance health examination, 200
admission to University, 14
financial aid, 19
transfer credit, 14
graduation honors, 178
Trustees, Board of: statement of University purpose, 207
members, 206
Tuition, See Expenses

U-V-W-X-Y-Z

University: statement of purpose, 7
divisions, 10
University Institutes. See Institutes
Withdrawing, 194
Women's Center, 201
Women's Studies:
program and courses, 168

NOTES

NOTES

NOTES

THE UNIVERSITY OF SANTA CLARA

Franklin St.
Lafayette St.
Sherman St.
Homestead Rd.
Campbell Ave.
The Alameda
Sante Clere St.
Alviso St.
Merket St.
Palm Dr.
Bellomy St.

Alumni Science Hall
Daly Science Center
De Saisset Museum
Meyer Theater
O'Connor Hall
Nobili Hall Jesuit Residence
Mission Santa Clere
Adobe Lodge Faculty Club
St Joseph's Hall
Varsi Hall
Admissions
Donohoe Alumni House
Ricard Memorial Observatory
Welsh Building Administration
Staff Lounge
Heafey Law Library
Leavey School of Business and Administration
Kenna Hall
Bergin Hall School of Law
MAIN GATE
Field House
Bennan Classroom Building
Sullivan Engineering Center
Michel Orredre Library
Tennis Courts
Buck Shaw Stadium
Physical Plant Facility
University Day Care Center
Leavey Activities Center
Cowell Student Health Center
Public Safety Personnel Office
Campisi
Graham Residance Center
Senfilippo
Music/Dance/Fine Arts Building
Welsh Hall
McLaughlin Hall
Dunne Hall
Benjamin Swig Hall
Benson Memorial Center

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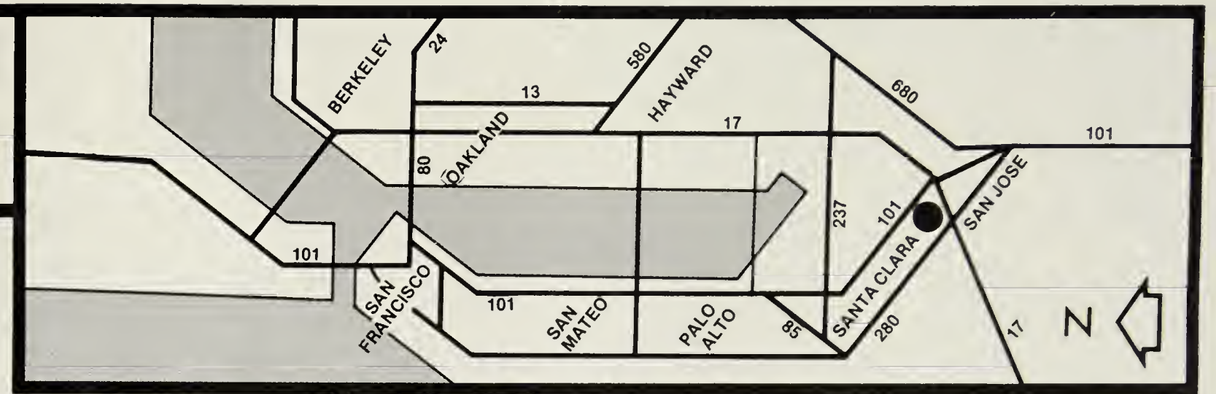

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